PARK STANDARDS

Office of Architectural Studies

City of Las Vegas

Department of Public Works

March 8, 2007

01010 Overview

These Design Standards list and describe requirements for design elements that your Project may or may not contain. Verify with the City Project Manager any elements in question.

Exceptions. **Any exceptions to these standards must be approved by city management above the level of the City Project Manager, PRIOR to showing such deviations to anyone other than the OAS project manager or inclusion on the drawings or in the specifications. Permission for any such deviations must also be approved by affected City Departments (IT, Facilities Management, Parks, TEFO, as appropriate to the standard).**

Minimum Requirements. These Design Standards consist of the minimum requirements for the design and construction of the project. If these Standards conflict in any way with the regulations of governmental authorities, the more stringent requirement shall govern. The fact that a code may allow a lesser requirement than these Standards shall provide no relief to the Consultants or Contractor in meeting the requirements of these Standards, and the Contract Documents prepared by the Consultant for the Project so shall state.

Liability for Use. These Design Standards in no way relieve the design professionals from their legal responsibilities. The design professionals continue to assume all liability for their work regardless of the amount of direction or information borrowed from these Standard Sections and Drawings. The project design professionals are encouraged to point out weaknesses in the current Standards and to recommend improvements, and may refuse to follow a Standard that the professional is unwilling to accept responsibility for. Any such refusal must not occur prior to a thorough and detailed discussion with the City about the Standard in question, and a written notice to the City.

Liability for Failure to Utilize. The Consultant does hereby agree to follow these Design Standards as applicable to the Project, and does agree to correct any failure to follow these Standards in the preparation of the Construction Documents, ***INCLUDING THE CORRECTION OF COMPLETED CONSTRUCTION,*** at no additional cost to the City. Such failures include, but are not limited to, the Consultant's failure to explicitly state the applicable Standards in the Construction Documents such that the Contractor is allowed to follow a less stringent requirement, a different standard or requirement, or provide a different model, product, or installation technique.

No Deferred Submittals. All work, including but not limited to drawings, specifications, and calculations, shall be provided by the Consultant for each and every part of the Project including those items that the building department may normally allow as "deferred submittals." When complying with NRS 338.140 by listing multiple manufacturers in the specifications, the Consultant shall review options with the City and select the most available, standard, or economical manufacturer's model to fully engineer, draw, and include in the bid and permit documents.

Equipment and Material Specifications. Provide open specifications except when the Design Standards call for "no substitutions". When substitutions are not allowed, that restriction MUST be stated in the specification. Do not simply state the allowed manufacturer/model and assume that is what will be provided.

List manufacturers and models, 3 minimum per item and "`or equal under the Substitution requirements of Section 01600`" as shown below. **Do NOT list one manufacturer's model as the standard with an "or equal", "or approved equal", "or comparable", or "or similar" as a lazy way to list additional acceptable manufacturers without going through the model comparisons. BE SPECIFIC about the model number for EACH manufacturer.** (Due to the post bid opening substitution clause time frames in the General Conditions, not listing the exact model number for each of the manufacturers can cause bidding issues, approval problems, bid protests, and additional costs.)

When a specific brand name or model number is specified, to meet the requirements of NRS 338.140 ("...calling for a designated material, product, thing or service by specific brand or trade name unless the specification lists **at least two** brands or trade names of comparable quality or utility **and** is followed by the words "**or equal**"...), the specification MUST be presented as follows:

- Model Number 123, by Manufacturer One,
- Model Number xyz, by Manufacturer Two,
- Model Number #@&, by Manufacturer Three,
- or equal under the Substitution requirements of Section 01600.

Note that the Substitution requirements of Section 01600 are very restrictive and time sensitive, and need to be emphasized with each "or equal".

Unit Pricing. Each requested unit price must specify the best guess estimate of a fixed quantity in the appropriate specification section. This is the quantity that the contractor is required to include in the Base Bid. The quantity is never going to be zero or one. If the actual quantity is less or this work is deleted, the contractor must credit the owner using the same unit price as extra quantities. All quantities should be based upon and specified as "in-place" measurements.

Contractor Experience and Licensing Requirements. Do NOT require a minimum or specific contractor's license in the specific specification sections. All contractors are required to have the proper licensing. Beyond that requirement, licensing requirements are between the contractor and State Contractor's Board. Requiring a minimum number of years of experience within a particular area of expertise is allowed, but make it clear who is required to have this experience: the prime general contractor, specialty contractor, at least one worker on the payroll, etc. These specific requirements are often poorly written and the cause of bid protests.

Standard Drawings and Specifications. The City's Standard Drawings and Specifications included in these Design Standards, and as additionally or otherwise provided by the Owner, are to be utilized if such elements are included in the final design. The design professional assumes all liability for their use and may recommend changes for the City's review and approval. The City's drawings generally do not include all of the information required for construction documents, but only that information that the City requires of the final design.

Terms and Language. The terms used in the City's standard General Conditions and Division One is "Owner" (not the City), "Consultant", "Contractor", "Contract" (the construction contract), "Contract Time", and "Contract Amount". Match your specification and drawings to these terms.

Avoid the following:

1. **Pronouns;** he, it, them, etc.; causes confusion.

2. **Cross referencing.**

3. **Construction jargon;** in court the publically perceived meaning prevails; not dictionary or technical definition.

4. **"which".**

5. **Legalistic words;** "heretofor", "hereinafter", "as per".

6. **Prepositional phrases;** use "platform top" not "top of platform".

7. **Tautologies;** "square shape", "sufficient enough", "each every", "round cylinder", etc.

8. **References or inclusions**; "such as", "including" (prefer using residuary legatee technique.) Never use "etc."

9. **Commas and semicolons**; unless a series, in which case a comma or semicolon must occur before the conjunction.

NEVER use the following:

1. **Repeat information.**

2. **"all"**; (except in residuary legatee clause), "all" is implied throughout contract documents, nor **"any"**; it can mean "any one only" when a plurality of conditions is intended.

3. **"and/or..."**; instead **use "or..."** which means "or...or both".

4. **"and" when a possibility of the singular condition is desired.** "and" is being interpreted strictly; **"or" is safer** because it can also mean "or both".

5. Indefinite phrases like **"if required"**, **"as required," "as determined," "workmanlike manner," "first class workmanship," "to satisfaction of," "in the opinion of"**; use tolerances or standards instead. Do not specify what you cannot measure.

6. **"by others,"** name the specific contractor or agent.

7. **"by Owner,"** unless specifically directed by the City project manager. Assume all projects are to be provided by the contractor as complete turnkey ready for occupancy except as directed by these standards.

8. **"mechanical,"** name the specific system such as HVAC, plumbing, fire protection, exhaust, etc. Reference may be made to mechanical ["M"] drawing sheets.

9. **"Uni-sex,"** due to the City's internal policing of e-mail messages for inappropriate content, as well as similar safeguards at certain consultants' businesses, use of the word "sex", even within hyphenated words such as that describing a non gender specific toilet room may delay or prevent delivery of e-mail messages with such reference.

General Layout of these Standards. These Design Standards are organized so that **requirements are placed in the MOST SPECIFIC section** of those locations available.

For example, the lighting fixtures requirement for parks could be placed in

"01050 Park Design" (general park design requirements) or
"16001 Design Information – Electrical" (general electrical information) or in
"16520 Exterior Lighting" (specific exterior lighting requirements).

In this lighting fixture example, the correct placement and most specific location is "16520 Exterior Lighting".

The general Park Design section may include information on where in the park to locate restrooms, concessions, trash pickup or any number of general considerations specific to park design. Since there is no standard CSI specification section in which to place this general information, the '01050 Park Design' section was created.

The other Division 1 General Requirements sections (01040 Site Design, 01060 Architectural Design, etc.) were created for a similar purpose, and should be used for placement of requirements only as a last resort

when the information can't be fitted elsewhere in more specific sections. Otherwise these general sections will quickly fill to overflowing with information.

The first section in each Division is an intermediate general information location that may be an appropriate location for some standards, listed in the following format: "00001 Design Information – Subject". For example, a design standard for concrete sealer would be placed in "03001 Design Information – Concrete" since there are currently no other concrete subdivision sections setup to specifically handle concrete accessories. If and when the list of concrete standards becomes very long, it will then be distributed into subsections for easier reference. The general "00001 Design Information" section would also be an appropriate location for miscellaneous information, specific to a Division, but not neatly fitting into any of the established subsections.

01020 Drawing & AutoCAD Conventions

General Information. *Construction Documents are required to be submitted on 24" x 36" sheet format.* No exceptions unless pre-approved by the City's Architectural Project Manager which must be based on a particular project scaling issue that can only be solved by going to a larger sheet size. All sheets of construction document sets must be printed on the same size print paper regardless of any variation in drawing sizes. Note that the civil drawings are required by Land Development to be on a 24 x 36 sheet size, no exceptions.

List of Drawings. The list of drawings must be sized to photocopy onto 8-1/2 x 11 paper size sheets. These photocopies will be attached to the Owner-Contractor Agreement and must be accurate and complete for all of the drawings sheets in the bid set, including the Sprint design, Nevada Power design, survey information, demolition plans, etc., and list the Sheet Number, Title and Date of each.

Title Block Information. The title block is to be used on every sheet in the set of drawings with exception to the civil and utility drawings. Xref the file into the drawing files at insertion point of 0,0.

Title Block Text Files. Insert the file into the drawing file at insertion point of 0,0. While inserting the file you will be prompted with the text (text w/ attributes) for the drawing sheet. Coordinate with the Architectural Project Manager for the CLV dwg. number used in the plans library and the city bid number.

Note: Prior to creating as-built record drawings the information for the number of sheets in the set will be added to the title block (e.g. sheet x of x). This information is almost always in error when completed at the beginning of the project.

Cover Sheet Information. This sheet shall include the project name and approval block described below. In addition, other information that may be included is the consultant's names, logos and addresses, possibly a rendering or building elevation of the project. If there is any reference to the city other than the title block it shall be indicated in such a way that it is clear the drawings were not created by the City.

Note: The title block is to be used on this sheet.

Note: Code information, sheet index, general notes, abbreviations, etc. are to be shown on the following sheet(s), not on the cover.

Approval Block Files. Attach the approval block to the cover sheet. The Architectural Services Project Manager is to be the only signature required on the cover sheet. Do not include any additional lines for signatures.

01030 Accessibility

Accessibility Regulations. Consultants are required to meet all applicable accessibility regulations, rules, standards and guidelines for accessibility, including but not limited to:

1. Federal Access Board. All regulations and guidelines associated with The Federal Access Board including the:

- Architectural Barriers Act, a law requiring access to facilities designed, built, altered, or leased with Federal funds.
- Rehabilitation Act, which created the Access Board.
- Americans with Disabilities Act (ADA), a major civil rights law prohibiting discrimination on the basis of disability in the private and public sectors.
- Telecommunications Act (Section 255), which requires access to new telecommunications and customer premises equipment where "readily achievable."
- Rehabilitation Act Amendments, which amends section 508 of the Rehabilitation Act to ensure access to electronic and information technology in the Federal sector.

As of the date of the Consultant Agreement, the Consultant's design is required to meet all Access Board:

- **Existing laws currently enacted by the Department of Justice, *plus***
- **Access Board proposed guidelines, which are "final" (whether published or not), *plus***
- **Access Board "proposed" guidelines, regardless of how preliminary.** Consultation with City staff is required where the cost of meeting early-proposed rules appears out of proportion to the benefit. Even in these cases, always provide for the future retrofitting of the requirement without major modification to the improvements under current design and construction.

The specific Access Board guidelines to comply with include, but are not limited to:

- **ADA-ABA Accessibility Guidelines** (Note that these replace the original rules established in 1991.)
- **Recreation Facilities Guidelines** (Swimming pools, golf, exercise equipment, areas of indoor and outdoor sports activity, including court sports [such as tennis, volleyball and racquetball], sports fields [such as softball, football, baseball and soccer] and other sports [such as gymnastics and wrestling], and locker rooms)
- **Outdoor Developed Area Guidelines** (Trails, trailheads, overlooks, benches, picnic tables, grills, trash receptacles, utilities)
- **Play Areas Guidelines** (Playground equipment and surfaces)
- **Building Elements Designed for Children's Use** (Included in ADA-ABA)
- **State and Local Government Facilities** (Included in ADA-ABA)
- **Public Rights-of-Way Guidelines** (As adopted by RTC)
- **Electronic and Information Technology Accessibility Standards** (Section 508) (When Federal funding/agencies are involved)
- **Telecommunications Act Accessibility Guidelines** (Section 255 of the Telecommunications Act of 1996) (Accessible equipment, if readily achievable)
- **Classroom Acoustics** (Design to guidelines to the extent they are readily achievable)

2. International Building Code (or other currently adopted building code)

Including local amendments.

3. ANSI A117.1 (latest version)

Design to the more stringent requirement where ANSI and ADA conflict.

4. Nevada Revised Statutes

These requirements are in addition to the ADA and other proceeding requirements. Reference NRS latest version and the latest version of Title 11, Chapter 10, Section 170, of the Municipal code of the City of Las Vegas, Nevada, 1983 Edition for actual text. (Link to handicapped parking matrix.)

NRS 338.180. 4. "4. In each public building and facility owned by this state or a political subdivision of this state, each entrance to a corridor which leads to a toilet facility must be marked with a sign . . ."

NRS 484.408 & LV Municipal Code - Parking space designated for handicapped: Signs

1. Any parking space designated for the handicapped must be indicated by a sign:

(a) Bearing the international symbol of access with or without the words "Parking," "Handicapped Parking," "Handicapped Parking Only" or "Reserved for the Handicapped," or any other word or combination of words indicating that the space is designated for the handicapped;

(b) Stating "Minimum fine of two hundred fifty dollars for use by others" or equivalent words; and

(c) The bottom of which must be not less than 4 feet above the ground.

2. In addition to the requirements of subsection 1, a parking space designated for the handicapped which:

(a) Is designed for the exclusive use of a vehicle with a side-loading wheelchair lift; and

(b) Is located in a parking lot with 60 or more parking spaces,

Must be indicated by a sign using a combination of words to state that the space is for the exclusive use of a vehicle with a side-loading wheelchair lift.

3. If a parking space is designed for the use of a vehicle with a side-loading wheelchair lift, the space which is immediately adjacent and intended for use in the loading and unloading of a wheelchair into or out of such a vehicle must be indicated by a sign:

(a) Stating "No Parking" or similar words which indicate that parking in such a space is prohibited;

(b) Stating "Minimum fine of $250 for violation" or similar words indicating that the minimum fine for parking in such a space is $250; and

(c) The bottom of which must not be less than 4 feet above the ground.

Site Ramps. In general, avoid the use of ADA ramps. It is usually less expensive to construct additional sidewalk at 5%, rather than a more direct route that requires an ADA compliant ramping design. A second more direct route can then include steps.

Site Access. Provide ADA wheelchair legal access along all pedestrian entry points into the project that

the public can reasonably be expected to be approaching from, regardless of the minimum required by ADA. Generally this means all pedestrian entry points provided for the project, or at least at the corners of the property, if entry points are planned for these locations. Intermediate entry points between the corners of the property would then not necessarily need to be wheelchair accessible to meet this requirement. This requirement does not by itself require the installation of any additional entry points above those otherwise already planned or otherwise required for the project.

Decomposed Granite Pathways. Reference "Section 02001 Site Construction, Soil Hardening Stabilizer – Walking Paths", for accessibility issues when utilizing decomposed granite as a pathway surface.

Signage. Reference drawings in this section for the following signs (see Section 10426 for additional mounting requirements):

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- Standard Handicap Parking Sign. Locate centered on the width of each parking stall (note: reference-mounting detail for height to install sign).
- Van Accessible Sign. Locate centered on the width of each van accessible parking stall (note: reference-mounting detail for height to install sign).
- Side-Lift Vehicles Only. Locate centered on the width of each stall required to be side-lift vehicles only (note: reference-mounting detail for height to install sign).
- No Parking Sign. Locate centered in the width of the access aisle as required for side-lift vehicles only (note: reference-mounting detail for height to install sign).

01040 Site Design (applies to both parks and site areas around buildings)

Exterior Wall Finishes. Reference Section 01060 Architectural Design for the requirements.

Turf. Reference Section 02900 Planting for limitations on turf area and slope.

Standard Civil Details. Copy all referenced standard civil engineering RTC "Blue Book" type details onto the drawings, for both on-site or off-site work. Do not simply reference the number of the details and assume that the workers on site have a copy of the book.

Parking and CAT Bus Stops/Pullout Areas. Include the minimum number of handicapped parking spaces required by the Planning Department and ADA Guidelines. Reference the Regional Transportation Commission design standards for bus stops.

Accessible Exterior Surfaces. Reference the "Accessible Exterior Surfaces Technical Article" (June 21, 1999) by the U.S. Architectural and Transportation Barriers Compliance Board for acceptable ADA exterior surfaces other than concrete and asphalt. Note that decomposed granite (without heavily mixed stabilizer similar to concrete) is NOT an acceptable surface when wet. Reference "Section 02001 Site Construction, Soil Hardening Stabilizer – Walking Paths" of these Design Standards for accessibility issues when utilizing decomposed granite as a pathway surface.

Wood chips are not an acceptable material for walking surface, fall zone, planting bed, or any other location anywhere in City projects due to maintenance issues.

Design Criteria For Trash Enclosures.
Function. To provide a temporary storage area for CLV maintenance crews to store trash accumulated from facility users, site landscape maintenance, and public trash generated at parks.
Design. See the City standard gate design and layout.
- Trash enclosures are to be provided with a concrete apron along the front side of the enclosure.
- The consultant shall include an isolation joint between the concrete pad of the enclosure and the apron in front.
- Reference Section 01060 Architectural Design for wall finish requirements.
- The handicapped accessible opening in the enclosure wall shown on the trash enclosure floor plan may be located on either side of the trash enclosure.

Drainage. Trash enclosures shall have positive drainage, see standard drawing, Section 01040 of the Design Standards.
Locking. See Section 02825 Fences, Gates & Hardware for trash gate locking information.
Signage. None required.
Engineering. The CLV consultant's structural engineer shall be responsible to determine all steel reinforcing inside masonry walls, masonry wall footing sizing, etc. of the trash enclosure and shall support the sizing with structural calculations suitable to obtain a building permit.
Accessibility. Even though the dumpsters are not specifically intended to be used by the public, the design is still required to meet handicapped accessibility requirements to prevent possible employment discrimination when hiring maintenance personnel. Consultant is responsible to ensure this requirement is met.
Republic Services. The current City standard design complies with standards set forth by and design has been signed off by Republic Services.

Location & Number of Trash Enclosures. Locate the dumpster enclosure so that trash may be picked up when the facility or park vehicular gates are closed, if possible. Trash dumpster enclosures shall be distributed equally throughout parks and facility sites, adjacent to parking lot areas where feasible to allow easy access for maintenance. Verify the locations of the trash enclosures with the CLV Project Manager during the design phase of the project.

The number of trash enclosures (each holding two 3-yard containers) required within park sites are as

follows:

- Parks (8 -10 acres in size) – One trash enclosure required.
- Parks (10-25 acres in size) – Two trash enclosures required at dispersed locations.

Fire Department Access. Comply with NFPA 1, NFPA 1901, CLV requirements and/or currently applicable regulations for fire lanes and fire access roadways.

The general requirements stipulate minimum 20' width, 28'/52' inside/outside radii, 81' diameter bulb turn-around where dead ends exceed 150', 13'-6" minimum clear height and maximum angles of approach/departure of 6% for a minimum of 25 feet with a maximum achieved grade of 12%. The gradient of fire lanes or access roadways adjacent to structures shall not exceed 6% run or cross slope to facilitate aerial fire apparatus staging.

Due to the many variables encountered on sites and building designs, the design team should meet early in the design process with the Fire Department to demonstrate how these requirements will be incorporated into the site design. See Section 02825 regarding general requirements for fire department access to Fences, Gates & Hardware.

01041 Parking Facilities Design *This section is a requirement of the APWA Certification program.*

General Design. Within the constraints set by regulatory authorities and design standards herein, the Consultant is free to propose any design. (Link to handicapped parking matrix.)

Regulations. The current regulations and standards include, but are not limited to:

City Planning & Development Department. Enforces the City Ordinances and policies relating to stall size, minimum number of spaces required, minimum landscaping requirements, required sight triangles at entries, setback yards, maximum light pole height, possible requirements for a traffic study to determine entry points and other traffic requirements.

References:

Urban Design Guidelines and Standards, "Parking and Traffic Circulation" - "Surface Parking Design, Queuing, Internal Circulation, Parking Structure Design" (March 97)

Zoning Ordinance Title 19, "Chapter 19.10 Parking, Loading And Traffic Standards", "Chapter 19.12 Landscape Wall and Buffer Requirements" and "Chapter 19.06 Special Purpose and Overlay Districts"

City Department of Public Works and the Regional Flood Control District of Clark County. A site specific hydrology study will likely be required to determine the drainage requirements.

Shared Parking. Shared parking layouts are highly encouraged. In general, common city facility uses have the following peak parking needs:

Swimming Pools: Weekend, day, summer.
Community Centers: Weekday, evening.
Senior Centers: Day.
Parks: Weekend, summer.
Athletic Fields: Weekend day/evening, weekday evening.

Minimum Parking Ratios. Provide parking ratios in accordance with the minimum zoning requirements. Advise the city of additional parking requirements when the minimum will not be adequate. Normally, do not provide accessible parking spaces above the minimum ADA requirements.

Athletic Fields. Since zoning regulations do not mandate minimum parking ratios for parks, use the following for athletic fields:

Baseball, Softball, Soccer: 60 spaces per field
Football: 125 spaces per field
Lacrosse: 90 spaces per field

These are the minimum requirements for participants. Tournament play requires roughly twice the number of spaces of regular play. Ask whether tournament play is anticipated when athletic fields are included in the program. (Link to the basis for these ratios.)

Swimming Pools. Although zoning regulations do mandate minimum parking ratios, a limited city survey of neighborhood pools indicates the number is too low. Provide the following minimum number of spaces:

Neighborhood Pools: Depending on the deck area and area demographics, between
1 space per each 100 square feet and

1 space per each 200 square feet of water surface area.
Large Water Parks: On a case by case analysis. (Link to the basis for these ratios.)

Structural and Pavement Design. The pavement design for surface parking lots and for the structural footing design of parking garages is determined from recommendation contained in a site specific geotechnical report contracted either by the City or the Consultant depending on the Consultant's contract work scope.

Lighting. Refer to Section 16520 Exterior Lighting for lighting requirements in surface parking lots. Lighting in parking garages should be design to best practice and industry recommendations, with interior surfaces painted white or a light color for best reflectance.

Materials. Surface parking lots shall be bituminous asphaltic concrete with seal coat and white colored striping.

Slope. Surface parking lots grades for parking spaces shall not exceed 5% in any direction, 2-4% is preferred. Handicapped spaces and access shall meet the requirements of Section 01030 Accessibility (2% maximum in ANY direction including diagonally). Parking garage grades for parking ramps (portions where parking is allowed on the ramp) shall not exceed 7%. Grades on express ramps (portions where parking is not allowed) shall not exceed 15%. Where ramps slope greater than 10%, transition slopes shall be provided at the top and bottom of the ramp. Transition slopes shall be a minimum 12 feet long and shall have a grade of approximately one-half the grade of the ramp.

Compact Spaces. Utilization of compact spaces, as allowed in the referenced zoning ordinance, is discouraged and requires concurrence by the Office of Architectural Services prior to including such spaces in the design.

Wheel Stops. Provide wheelstops where parking spaces adjoin sidewalks to prevent cars from overhanging the sidewalk (one per two spaces is acceptable). Wheelstops are not needed where parking spaces adjoin landscaping. At handicap spaces with adjoining flush sidewalks, wheelstops are preferred over bollards as a method of restricting vehicle trespass.

Revenue Devices. Confirm the method of revenue collection (meters, attendant booth, card readers, etc.) during project programming phase. When parking meters are desired, the City's current preferred product is the Duncan Eagle Model 90. The City will purchase the meter heads and the Contractor shall be responsible for the materials necessary to mount the meters and provide installation of the mounting devices (poles, yokes, etc.). Change machines shall be provided when meters are installed in parking garages, and shall be located near elevator or main stair access points on alternating floors and shall be provided with electrical service. Provide adequate directional signage to change machine locations.

Signage. Construction documents for parking garages shall include a Signage Plan and Signage Schedule. Comply with regulatory agency signage requirements. Additionally, way finding signs and parking level identification signs shall be color coded, using a palette of primary colors. Consideration may also be given to other means of location identification. All vehicle entrances into parking garages shall be marked by the City's standard parking garage entrance signs (see the City Hall Stewart parking garage entrance signage).

Clear Height & Height Clearance Bars. Comply with building code and accessibility standards. Maintain required van accessible clear heights along all vehicular paths connecting vehicle entry/exits and van accessible parking spaces. Exercise caution in allowing plumbing, sprinkler or other utility lines to be placed within the clear height. Limit such lines to areas outside of the path of vehicle travel, or require additional height to accommodate the intrusion below the structure. Provide height clearance bars at all vehicle entries and at other locations where the clear height is further reduced. Locate where provisions for using an alternative route with adequate clearance remain possible (avoid requirement to make extensive reverse movement). Height clearance bars shall be 8 inch PVC pipe with die cut or computer cut letters, suspended from the structure above by cable or chain. A dark background color with white

letters is recommended.

Security. Determine requirements for Close Circuit TV and recording equipment during the programming phase. When security cameras are required, they shall be placed at both ends of drive aisles, at elevator entry points and at change machine locations.

Fire Sprinklers. The City Standard to provide fire sprinkler protection in all occupied buildings does not apply to parking garages. Verify code requirements with the Building and Fire Departments and only provide code required systems.

01050 Park Design

Park Amenities. Park amenities vary with the size of the park, its location, and the current & future needs of the area. The City of Las Vegas goals for amenities in various size categories is provided as a guideline for what may be required in a park of a particular size.

Every park should normally include at least the following amenities:

- A 10 foot (8 to 12 feet as directed by city project manager) wide concrete loop walk connecting all major elements within the park (for pedestrian circulation, maintenance vehicles, Marshal vehicles, emergency vehicles), see Section 03001 Concrete.
- A 5K (3.1 mile) running trail within the park that does not cross vehicle paths.
- Shaded totlot (both age groups).
- Drinking fountain.

Adjacent Residential Properties. Walking paths or other hard surfaces or activity areas should not provide views into residential properties, and be a minimum of 30 feet from any residential property line (50 feet where acreage permits). Where drainage patterns allow the grades to be lowered as necessary, the existing residential walls shall be used to provide all the necessary screening. Provide a site and grading design which does not require touching the existing off-property walls including existing adjacent grades, wall surface treatments, nor increasing height.

Artwork. Do consider the possibility for artwork locations, either on surfaces that are already a part of the design or possible locations for freestanding art, within the design. Such artwork must be at little or no additional cost to the City budget, with additional funding and coordination provided by the Arts Commission or others.

Color Scheme. Do propose a unified color scheme for the project including play equipment, resilient surfaces, light poles, gates, walls, restrooms, ramadas, handrails, bollards, tables, benches, trash receptacles, etc.

Restrooms. Use the Owner's standard design. See Section 15001 Design Information – Mechanical for the water pressure booster pump issue.

Sidewalks. Reference Section 03001 Design Information for specific requirements.

Concessions. If instructed to provide a concession space in a structure, utilize the City's standard design and provide only the improvements and amenities indicated on that design. No grease traps. See the Concession Equipment Building Standards Drawing.

Group Picnic Areas. See Section 02875 Site Shelters for the group picnic area requirements.

Drainage. Design the site drainage so that all flows divert around any courts, skateparks, play equipment areas, and similar sporting/play improvements.

Climbing Structures. Avoid designs of trellises, entry and shade structures that can be easily climbed by children. They tend to see them as extensions of the play equipment.

Drainage Basins. Note that there are numerous requirements from the Regional Flood Control District of Clark County and the City regarding uses and signage/warnings when utilizing the area in drainage basins for parks or other uses. Reference required sign titled Multi-use Facility.

Pump Enclosures. For parks under 20 acres, the use of secure walled or fenced equipment enclosures is to be discouraged in favor of individual pad mounted equipment with locking covers dispersed throughout the site. This dispersion of pad-mounted equipment includes the irrigation booster pumps, the irrigation controllers (unless located in the restroom chase), electrical switchgear and panels, and backflow prevention devices.

When needed due to the concentrated location of pump equipment in large parks, pump enclosures and similar exterior secure enclosure areas are constructed of a CMU wall with an opaque gate per the City standard gate design, and a 6 gauge chain link fence laid horizontal as a security roof, height as necessary to meet code for clearance in front of electrical panels. These enclosures shall not be located at the "front door" of the park, and should be integrated into the design so as to be invisible. Reference the Utility Enclosure Gate drawings included in this section of the Design Standards.

Dog Waste Bag Dispensers. Provide at each pedestrian entrance into the park, at each parking lot entry point into the park, and throughout the walking trails within the park. Reference Section 02870 for additional information.

Signage. The following is a list of the general signs required in park projects and the locations / quantity of each type of sign to be installed

Note: Reference Signage & Graphics section 10426 for additional information in regard to signage specifications, mounting requirements, and mounting heights. Reference additional Design Standards sections for additional signs relating to specific activities.

- Park Hours Custom Hours: Coordinate with Project Manager whether the park will have non-standard hours of operation. If the park does have non-standard operating hours provide the sign drawing showing attachment to the Park Rules sign.
- Park Rules: One sign located at each main pedestrian entrance and one sign located at each vehicular entrance.
- Report Vandalism: One sign located at the main entrances to areas that may attract vandalism such as playground equipment areas, skate parks and group shelters. Avoid mounting signs to posts of shade structures or ramada's.
- Dog Bag Dispensers: One sign mounted on post above dog waste bag dispenser. Coordinate with Dog waste bag dispenser design requirements in Site Furnishings Division 2, Section 02870 (Dog Station).
- Multi-Use Facility (Detention Basin): One sign at each entrance to detention basins. Note: reference Drainage Basins paragraph in this section for additional signage requirements.
- No wheeled Toys: Signs are required to be installed at entry points to resilient surface tracks.
- Children's Park (Designated): One sign located above park rules sign. Reference park rules sign for locations. Note: This sign to be used only if council appropriates the park specifically for children.
- Winter Irrigation: One sign located at each main pedestrian entrance and vehicular entrance. Also install signs around the perimeter of turf areas at a maximum spacing of 100 lineal ft. between signs or as deemed necessary. Mount on post with other signs and if necessary on light poles. Note: Winter Irrigation sign only to be included in the construction documents if the park is scheduled to be completed between the months of November and February.
- Walk Loop/Amenity: When a park has a walk loop, provide sign(s) at main parking lot(s). Sign size to be determined by park layout (see examples of a 100 acre park, Centennial Hills, and a 7 acre park, Bob Baskin). Sign blank to be sized in 6" increments, as requried. Text to be 3/8" bold arial.

01051 Trail Design

Standards. In addition to these and other design requirements, comply with the standards of the following organizations:

- City of Las Vegas Planning Department trail standards for the particular type of trail under design.
- Clark County Regional Transportation Commission (RTC)
  - Alternative Transportation Mode Master Plan
  - Uniform Standard Drawings for Shared Use Paths
- Clark County Regional Flood Control District (RFCD), where flood control access roads are utilized.
- American Association of State Highway and Transportation Officials (AASHTO), bicycle facilities.
- United States Department of Transportation (USDOT)
  - Guidelines for sidewalk and trail access
  - Manual on Uniform Traffic Control Devices, http://mutcd.fhwa.dot.gov/
- Federal Access Board (ADA), Outdoor Developed Areas Guidelines and other guidelines, see Section 01030 Accessibility of these Design Standards.

The standards of this Section 010501 shall govern any differences with the above standards.

Variation from these Standards. These standards may be modified by the City Project Manager on a case-by-case basis after consultation with city management. Some trails may not include all of the elements indicated herein or as required by the Planning Department. Other trails may require additional amenities and planting to blend into existing trail systems and neighborhoods.

Clear Width. Horizontal clearance includes a minimum 2' clear zone on each side of the trail tread with a minimum 3' (5' for equestrian) separation from obstacles such as poles, fence posts, protective railings, bridge abutments, planting and trees.

Clear Height. Minimum vertical clearances:
Non-equestrian trails, 10'.
Equestrian trails, 12'.
Flood control access roads, 17'.

Grading. Balance cut and fill or obtain written permission/sign-off from the City Project Manager where not possible. Note that BLM leased sites have special export restrictions, reference Section 02300 Earthwork.

Propose retainage solutions for landscape slopes over 8%. Do not disturb adjacent property line walls; stabilize soils at walls as needed.

Equestrian. Reference Section 01052 Equestrian Design for additional information when designing Multi-Use Equestrian Trails.

Surface. Pedestrian pathways shall be concrete unless directed otherwise. Maintain the required design trail width at road and driveway crossings (don't neck down at public sidewalk curb cuts).

Protect sidewalks from adjacent sloped ground cover spilling onto the walks with curbs. When utilizing such a sidewalk curb, provide a 2" depth of DG adjacent instead of 4", reference Section 02900 Planting. Reference Section 03001 Design Information for concrete sidewalk requirements.

Pedestrian sidewalks must meet the slope and cross slope requirements of Section 01030 Accessibility. Avoid designs requiring ADA ramps.

Most trails, bridges and overpasses will require a structural design capable of handling a sidewalk street

sweeper (less than 5' wide). Trails without adjacent roadways may require designs capable of handling pickup service vehicle loads and clearances; verify with the project manager.

Decomposed Granite Pathways. Reference "Section 02001 Site Construction, Soil Hardening Stabilizer – Walking Paths", for accessibility issues when utilizing decomposed granite as a pathway surface.

Trail Crossings at Public Streets.
Vehicle Barriers: Yes, unless probability of vehicles mistaking the trail for a road is minor.
ADA Detectable Warning Surface: Yes, at curb cuts per RTC Standards; see RTC Drawing 235.
Crosswalk Marking: Yes, per RTC Standards.

Utilize the center island vehicle barrier design where 10-foot wide multi-purpose trails cross public streets (instead of the bollard barrier design). Keep plantings out of the RTC 201.2 Sight Visibility Zones and boulders below the 24" maximum height if within the Visibility Zone at intersections.

> "An alternative design presented by the AASHTO is to split the entryway into two five-foot paths separated by low landscaping to restrict entry of motor vehicles." Quote from the CLV Transportation Trails Element.

Designs should not require major modifications to the standard RTC drawings.

Mid-block Crossings: Provide street lighting at mid-block crossings or revise the trail crossing location to a better lit location.

Trail Crossings at Private Drives.
Vehicle Barriers: No, unless vehicle trespass is likely.
ADA Detectable Warning Surface: Yes, at curb cuts per RTC Standards; see RTC Drawing 235.
Crosswalk Marking: No.

Do not provide vehicle barriers where trails cross private drives and minor public streets. Provide ADA detectable warning surfaces at these crossing per Section 01030 Accessibility, but do not extend the tactile surfaces into the traffic lane. Do not provide any special surfaces or crosswalk markings across these drives.

Site Furniture. Locate site furniture nodes at approximately ¼ mile intervals, mid-block locations, with location consideration given for views from the bench.

Each node consists of: one **Bench**, one **Trash Receptacle**, and one **Dog Waste Bag Dispenser.** Reference Section 02870 of the Design Standards for specification information for these items.

Locate the bench on a concrete extension of the sidewalk, beyond the minimum design width of the walk so that bicycles on the path do not impact seated pedestrians. Provide the required ADA wheelchair space adjacent to the bench, and ADA access to the trash receptacle and bag dispenser; see Section 01030 Accessibility.

Note that RTC Drawing 255 and 255.1 recommends fixed objects be a minimum of 3 feet from the edge of Shared Use Paths. This should apply to the Dog Waste Bag Dispenser to avoid trail traffic.

Note that Section 1107.2 of the Accessible Right-of-Way Guidelines only permits a 12" overlap of required clear floor area for furniture with the pedestrian access route.

Color Scheme. Do propose a unified color scheme for the project including handrails, bollards, benches, trash receptacles, etc. to coordinate with the neighborhood.

Plantings. Provide plantings as follows:

Trees: One tree for each approximately 50 lineal feet of trail, 36" box size; preferred species – Chitalpa, Vitex, Australian Willow (other species may be proposed, reference Section 02900).

Shrubs: One grouping of 2 or 3 plants between trees; preferred species – Regal Mist Grass, Red Yucca (other species may be proposed, reference Section 02900).

Decomposed Granite Groundcover: Sizes and depths as required in Section 02900 Planting. Due to the narrow width of most trail cross-sections, all DG may be of the 3mm size.

Boulders: Boulders may also be used in the design. See Section 02900 Planting for specification.

Vegetation should be placed as to not obscure hazards or provide places for people to hide.

Irrigation. Provide a water meter with backflow protection for plant irrigation. Provide enclosures for above ground backflow devices and locking enclosures for irrigation controls. See Section 01810 Irrigation Systems for system requirements.

Dry pack watering systems may be considered in lieu of LVVWD water service for particular projects.

Phone Service. A phone line will be required for connection to the irrigation controls. See Section 01810 Irrigation System.

Electrical Service. Connect into existing metered right-of-way street light electrical system to power irrigation controls where power capacity is available.

Lighting. Trails located along lighted roadways do not require supplemental lighting.

Refer to the CLV Planning Maps to identify whether the trail is a Recreation or Transportation Trail.

Recreation Trails. Pathway lighting is not required along roadways or elsewhere, unless directed otherwise by the City Project Manager. An exception would be infill lighting along a trail that is partially lit by existing street lighting or other lights, but contains gaps in this lighting pattern. In these cases in-fill lighting should be provided at roughly the same lighting levels as the connecting lit portions of the trail, up to a lit connecting trail or street so pedestrians can continue.

Transportation Trails. Pathway lighting should be considered if the trail is not adjacent to roadway lighting. In deciding whether to light the trail, consideration should be given as to how likely the trail will be used as an alternate mode of transportation for commuting after dark.

Trail underpasses and pedestrian tunnels should be lit regardless of whether the connecting trail is lighted.

Reference Section 16520 Exterior Lighting & Electrical for lighting levels and additional information when providing lighting.

Signage. The following is a list of the general signs required in trail projects and the locations / quantity of each type of sign to be installed.

Note: Reference Signage & Graphics Section 10426 for additional information in regard to signage specifications, mounting requirements, and mounting heights.
RTC Drawing 255 and 255.1 recommends fixed objects (signs) be a minimum of 3 feet from the edge of Shared Use Paths.
Reference RTC Drawing 256 series for trail mid-block crossing signage.

- Dog Bag Dispensers: One sign mounted on post above dog waste bag dispenser. Coordinate with Dog waste bag dispenser design requirements in Site Furnishings Division 2, Section 02870 (Dog Station).

As applicable:

- Multi-Use Facility (Detention Basin): One sign at each entrance to detention basins.
- Trail Crossing not at Intersection: Require signage at public roadway crossings located mid-block between intersections; see RTC Drawing 256.2.

Design consultant may propose other trail signs as appropriate, see RTC Drawing 255.3.

Currently there are no city or county wide standards for trail information and etiquette signage at trailheads and along trails.

Items Not Required. The following amenities are normally not required or to be used along multi-purpose trails: sod, decorative or colored concrete, shade structures, drinking fountains, directional or trail identification signage (except at trailheads), or trash dumpsters.

Accessibility. Design must accommodate all current and proposed Access Board rules including "Guidelines for Outdoor Developed Areas."

PEDESTRIAN. There are four levels of pedestrian access routes to pick from in determining ADA compliance, depending on who is using the pathway and its relationship to road right-of-way.

- For trails that run along side roadways, flood channels or similar fixed slope improvements, use the guidelines in 2 below.

- For trails in parks, trailheads, and other off-road areas, use 1, 3, and/or 4 depending on how steep the grades are and the allowed application in ADA-ABA and the Outdoor Developed Areas Guidelines.

  1. Accessible Route (Re: ADAAG and ADA-ABA) [1:12 max. slope]
  2. Pedestrian Access Route (Re: Guidelines for Accessible Public Right-of-Way) [1:20 or match road slope if more, except in intersection crosswalks]
  3. Outdoor Recreation Access Route (Re: Guidelines for Outdoor Developed Areas) [1:10 max. slope]
  4. Trail (Re: Guidelines for Outdoor Developed Areas) [1:8 max. slope]

NON-PEDESTRIAN. The Access Board (ADA) only regulates trails and pathways primarily designed and constructed for pedestrian use. If a trail is not primarily intended for pedestrian use (even though pedestrians may use it), and not otherwise required by the Access Board guidelines, there are no accessibility requirements or design constraints.

Note that AASHTO has published Guidelines for Bicycle Facilities, which provides criteria for such a non-pedestrian trail. A comparison of these bicycle trail guidelines with the Outdoor Developed Areas Trail Guidelines is printed in the Table 1 to the Appendix to the Outdoor Developed Areas Guidelines.

NOTES.

- Trails. The "Trails" requirements in the Outdoor Guidelines do not apply to non-pedestrian multi-use trails. However, if the design presents a portion of a pathway designed primarily for pedestrian access, the Trails requirements would apply.

  > "The accessibility guidelines for trails apply to those which are designed and constructed for pedestrian use. These guidelines are not applicable to trails primarily designed and constructed for recreational use by equestrians, mountain bicyclists, snowmobile users, or off-highway vehicle users, even if pedestrians may occasionally use the same trails."

- Compacted chat or gravel may qualify as an acceptable "Outdoor Recreation Access Route" material ("firm and stable"). Note that unstabilized decomposed granite does not qualify as "stable" when wet

(rotational test). Compacted Type II does qualify as firm and stable.
(http://www.access-board.gov/research&training/Exterior%20Surfaces/exteriorsarticle.htm)

- The Outdoor Guidelines include requirements for "Overlooks/Viewing Areas" if such are included in the design.

- Three of the four levels of access routes are outlined in the following article:
http://www.ncaonline.org/monographs/8accessible-trails.shtml
(The Outdoor Access Route referenced in this article is called the Outdoor Recreation Access Route in the guidelines.)

- *Exception* * referenced in the following chart: (16.1.1 Conditions for Departure): The provision may not apply if it cannot be provided because compliance would cause substantial harm to cultural, historic, religious or significant natural features or characteristics; substantially alter the nature of the setting or purpose of the facility; require construction methods or materials that are prohibited by Federal, state or local regulations or statutes; or would not be feasible due to terrain or the prevailing construction practices.

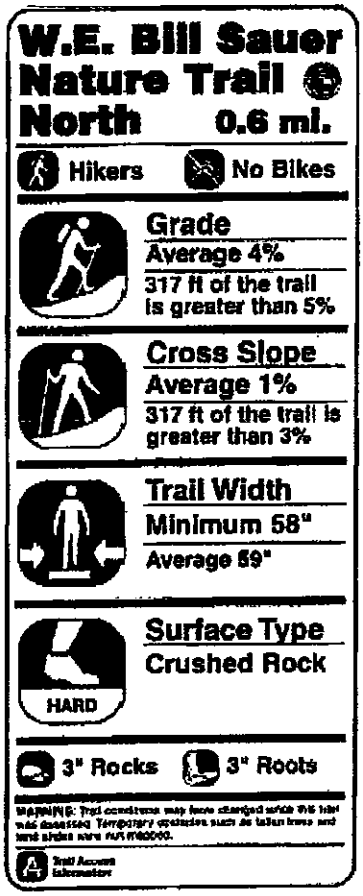
- The following chart is intended for reference and guidance in selecting which set of rules to apply and is not a complete list of the requirements. Reference the Access Board web site for additional information.

Type of Pathway	Accessible Route	Pedestrian Access Route	Outdoor Recreation Access Route	Trail
Access Board Guidelines Section	ADAAG, ADA-ABA (Chapter 4)	Accessible Public Right of Way (Chapter 11 of ADA-ABA)	Outdoor Developed Areas (Chapter 16.3 of ADA-ABA)	Outdoor Developed Areas (Chapter 16.2 of ADA-ABA)
Applicable	At least one accessible route shall connect facility arrival points, entrances, spaces, accessible elements within the building and site. (Chapter 206.)	If pathways are being provided in new and altered facilities in public right-of-way devoted to transportation purposes. Used to connect elements required to be accessible such as site furniture.	A continuous unobstructed path designated for pedestrian use that connects accessible elements within a picnic area, camping area, or designated trailhead. Not applicable to sidewalks; see Accessible Route.	Trails where travel on foot is one of the designated uses for which the trail was created, including multi-use trails. Examples include trails through forested parks, a shared use path, or back country trail. Not applicable to sidewalks; see Accessible Route.
Surface	Stable, Firm, Slip resistant	Stable, Firm, Slip resistant	Firm and Stable	Firm and Stable *Exception**
Max Running Slope	1: 20 Walk 1: 12 Ramp, complying with Chapter 405	1: 20 Walk 1: 12 Ramp, complying with Chapter 405 *Exception- Max may be any slope that does not exceed the grade of the adjacent roadway*	1: 20 (for any distance) 1: 12 (for max 50 ft) 1: 10 (for max 30 ft)	1: 20 (for any distance) 1: 12 (for max 200 ft) 1: 10 (for max 30 ft) 1: 8 (for max 10 ft) *Exception- 1: 7 (for 5 ft max for open drainage structures)* *Exception**
Max Cross Slope	1: 50	1: 48 *Exception- At mid-block street crossings, road slope governs*	1: 33 *Exception- 1: 20 (for drainage purposes)*	1: 20 *Exception- 1: 10 (at the bottom of an open drain where clear tread width is a min of 42 inches)*
Min Clear Tread Width	36 inches 32 inches (for no more than 24 inches)	48 inches	36 inches *Exception- 32 inches when * applies*	36 inches for any distance *Exception- 32 inches when * applies.*
Edge Protection	Where provided, min of 2 inches.	See Accessible Route Ramps, Chapter 405.9.2	Where provided, min of 3 inches.	Where provided, 3 inches min.
Tread Obstacles	(Changes in Level) 1/4 inch (no beveled edge) 1/4 - 1/2 inch must have a beveled edge with a max slope of 1: 2. Over 1/2 inch= ramp.	Same as Accessible Routes	1 inch high max *Exception- 2 inches high max (where beveled with a slope no greater than 1: 2 and where * applies.)*	2 inches high max *Exception- 3 inches max (where running and cross slopes are 1: 20 or less)* *Exception**
Passing Space	Every 200 feet where clear tread width is less than 60 inches, a minimum 60 X 60 inch space, or a t-shaped intersection of two walks or corridors with arms and stem extending min of 48 inches.	No requirement	Every 200 feet where clear tread width is less than 60 inches, a minimum 60 X 60 inch space, or a t-shaped intersection of two walking surfaces with arms and stem extending min of 48 inches. *Exception- every 300 feet where * applies.*	Every 1000 feet where clear tread width is less than 60 inches, a 60 X 60 inch min passing space or a t-shaped intersection of two walking surfaces with arms and stem extending min of 48 inches. *Exception**
Resting Intervals	(Landings) 60 inch min length, min width as wide as the ramp run leading to it, if change in direction occurs, must have 60 X 60 inch space.	See Accessible Route Ramps, Chapter 405.9.2	60 inches min length, width at least as wide as the widest portion of the trail segment leading to the resting interval and a max slope of 1: 33 *Exception- a max slope of 1: 20 is allowed for drainage purposes.*	60 inches min length, width at least as wide as the widest portion of the trail segment leading to the resting interval and a maximum slope of 1: 20. *Exception**

Although most trails in the city are urban in nature, for more of a rural or wilderness setting, consider the use of the Universal Trail Assessment Process (UTAP).

http://www.beneficialdesigns.com/trails/utap.html

http://www.fhwa.dot.gov/environment/sidewalk2/sidewalks213.htm



Signage example from the UTAP.

01052 Equestrian Design

Equestrian Trails. In accordance with the Planning Department requirements, utilize a fine limestone chat gravel surface (1/4" minus). Reference Section 01051 Trail Design.

Note: This is a new section. These standards are a work in progress and have not been finalized.

Equestrian Trailheads. Assumes a multiuse trail for equestrians, hikers and mountain bikers.

Vehicle gates. Provide the City standard vehicle gates so the trailhead can be restricted to day use. Do not restrict the horse trails accessing or flowing through the trailhead during trailhead closing, with the following exception. Provide in the layout for the possibility of adding future fencing along adjoining public streets to "lock-down" the trailhead access from persons parking their trailers on the immediate street to avoid the park closing hours and riding in around the vehicle gates.

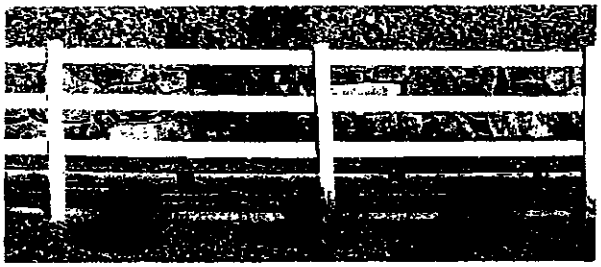
Parking for cars and horse trailers. Separate the cars from the horse trailers at the vehicle entry point into the facility so the cars have no reason to drive through the horse trailer area.

> Car parking. A standard curb and asphalt surface is preferred. Mountain bikers and hikers will utilize this area. Provide 20 to 30 spaces (including the required number of accessible spaces), with layout expandability to double the number if the site acreage allows.
>
> Horse trailer parking. Straight-ahead pull through spaces with generous turning aisle width (30 feet minimum) and a fine limestone chat gravel surface are required. The circulation pattern should be self-explanatory and avoid figure-8 and similar complicated patterns. Provide 20 to 30 spaces. If space allows, each space should be 80 feet long by 30 feet wide (space for a 22' vehicle pulling a 48' trailer plus 10' to load without blocking drive aisles; width for tying to both sides of the trailer). If curbing is not provided around the chat parking area, contain vehicles to the designated parking area by other means. If curbing is utilized, omit at horse travel paths. Apply for a variance to omit any required landscaped parking lot islands to provide for easy trailer maneuvering and to prevent the horses from eating plants (OAS will assist in gaining the variance). Provide multiple points out of the parking area for horse travel into the facility.

Staging area. Provide an equestrian staging area outside of the parking area for 10 to 15 horses. A 40 foot diameter round pen with space to tie up on the outside is ideal. Do not provide small corrals. Shade is not required.

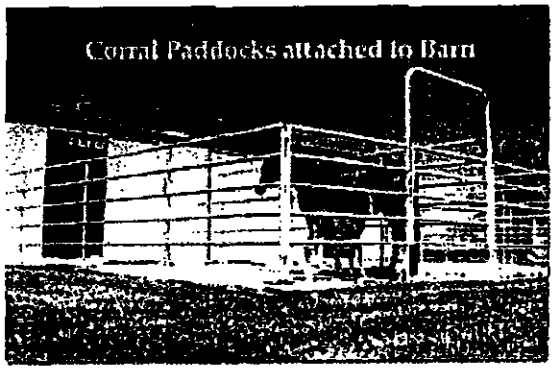
Horse travel path & trails. The horse travel path between the trailer parking area, staging area, restroom, drinking fountain, trail connection and picnic area should be 10 feet wide minimum if two way traffic is likely, with a limestone chat surface over a compacted clay base, and edge treatment or change in surface material/color to help contain the riders and their animals. The equestrian travel path should not cross or come within 5 feet of concrete walks, asphalt paving or other similar hard surfaces.

Fences. The standard equestrian trail fence required by the Planning Department is the "Country Estate Fence, Deck & Railing", a PVC fence that is designed to visually control horses, not physically contain them. http://www.countryestate.com/



This PVC type of fence is not the preferred option at trailheads due to vandalism and limited horse control, although it may be utilized as a continuation of a trail fence leading into the trailhead. Specify a tamper-resistant mechanical fastened post cap attachment.

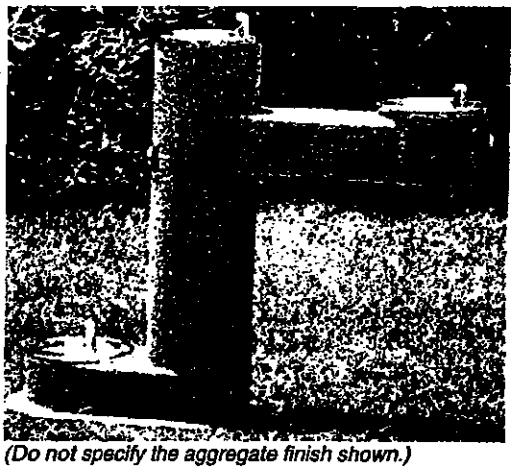
Other types of fences, such as welded square tube fencing used at parks, should not be utilized due to possible injury to the horses. A heavily galvanized open pipe/tube post and rail fence designed specifically for corrals should be used where separation is needed between equestrian areas and adjacent properties, parks, other uses, and vehicular traffic.



Vegetation, ground cover, rocks. Provide only natural species that will neither harm nor attract the attention of the horses. Reference Section 02900 Planting for a list of prohibited plants due to toxics or pollens. In general, do not provide vegetation in the equestrian areas. When provided, protect trees so that people will not be tempted to tie horses to them and also to protect the tree from having the bark eaten. Turf is not permitted. Natural vegetation should be left undisturbed and worked around where possible. Consideration should be given to leaving as much of the site undisturbed as is practical to meet program requirements. Ground cover outside of the pathways should be gravel of a size and color to appear as natural as possible to match adjacent desert paving. Rock outcropping should be left undisturbed where possible.

Restroom. Locate a small restroom, from the City's stock design plans. Provide horse hitches, bicycle rack, and locate so the restroom is available to other riders from the trails that are not parked at this trailhead.

Drinking fountain. One City standard drinking fountain with dog bowl option, plus a jug filler fixture (MDF Model 100 Wall Mount Jug Filler or post model), in a location to discourage horse contact. Consider the overflow from the jug filler.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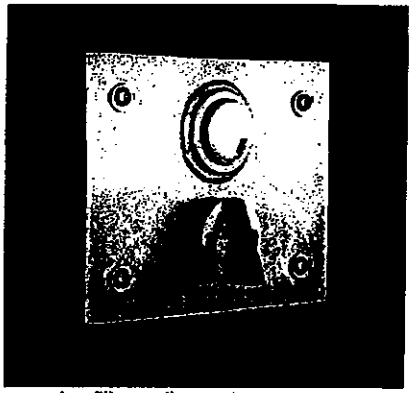

Jug filler wall mount


Jug filler post mount

Horse drinking bowls. Provide heavy-duty drinking bowls in the staging area and near the trail and restroom for use by those passing by on the trail or using the restroom, away from the drinking fountain. Size the plumbing to provide for additional future bowls.
Possible manufacturers:
Nelson 300 http://www.nelsonmfg.com/a300H_001.htm
Horse Drinker http://www.horsedrinker.com/
Drinking Post http://www.drinkingpost.com/ (The durability of this unit has been questioned.)

Future horse wash rack. Provide space and underground plumbing stubs for one future horse wash rack, which will consist of a rough finish concrete slab sloped to drain, connected to the sanitary sewer through a grease interceptor, time demand controlled hose bibb with short section of hose, and roof over the rack area (to comply with blocking rain water from entering the sanitary sewer system).

Freeze protection. Note that freeze protection of the water lines and fixtures is going to be an issue in the design. The restroom plumbing chase has a heater. The standard practice of draining and shutting down the drinking fountains and other water fixtures in the winter months is not going to be acceptable for these year round facilities.

Signage.

City Trail System: The Planning Department requires standard MUTCD signage.
Non-City Trail System: No signage is to be provided by the City.
City Trailhead Facility:

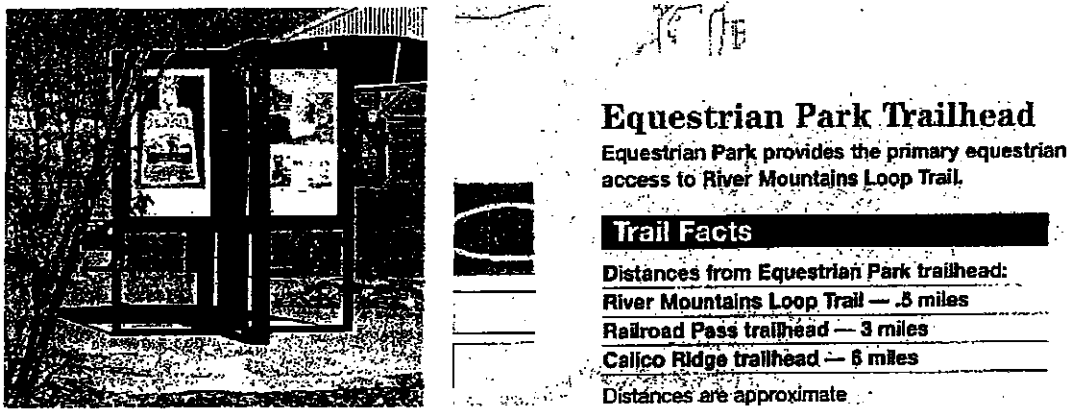
General. The trailhead facility signage will follow the OAS park signage standards including a Park Monument Sign. Reference sections 1050 Park Design and 10426 Signage & Graphics for more information.

Parking. Provide a "Horse trailer parking only" sign at the equestrian side of the decision point between the two parking lots.

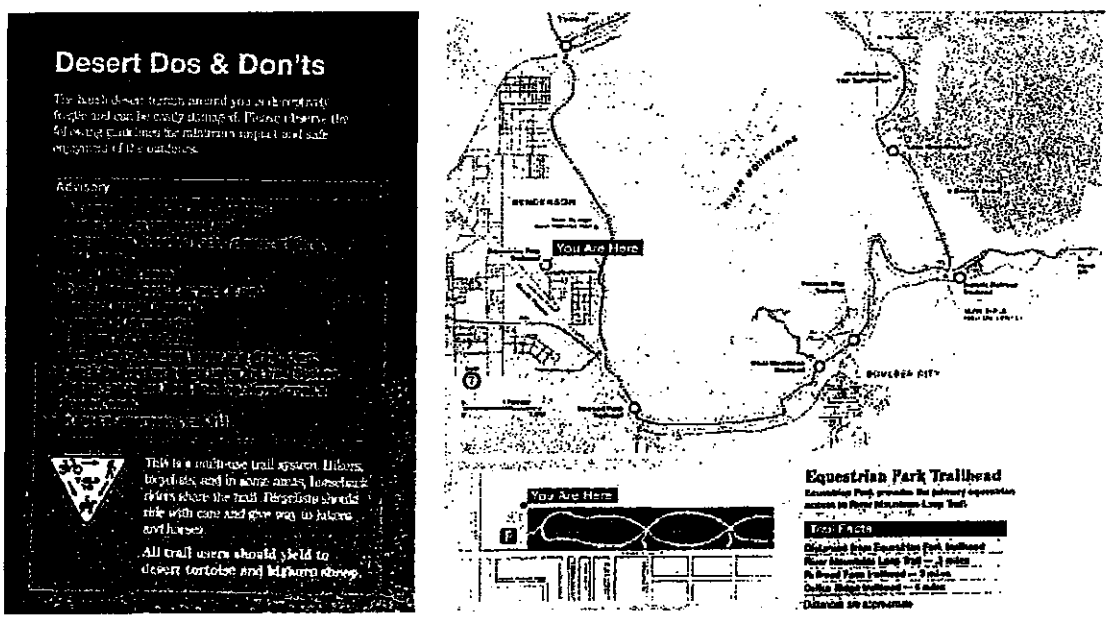
Multi-use Trail Signage. Signage needs to be posted at the vehicular entrance to the trailhead facility, as well as at each trail connection point, restricting the use of the facility and trails to "Hikers, Bicyclists, and Horseback Riders" as appropriate to each trail. "Off road motorized vehicles are strictly forbidden from using this trailhead facility for parking, unloading or any other purpose."

Warning Sign. If the design cannot avoid having the equestrian trail or pathways cross a paved or concrete area, provide the following signage at each such point, "For your safety, dismount and lead your horse across this area."

Information Kiosk. Trailhead kiosk signage is required indicating the trail name(s), a map with mileage, difficulty and accessibility levels, permitted users, trail rules and etiquette, and emergency information. There is a standard for this type of information being used for the River Mountain Trail system.



The kiosk should be of a design that does not include a roof structure since they provide little useful shade. Note that south facing panels will fade or discolor printed materials rapidly.



Picnic tables, site furniture. Provide 2 to 4 shaded picnic tables. Users will insist on their horses being nearby, and shaded in the summer, so a location near the staging area may work. Note that a certain percentage of the tables need to be accessible. For larger sites, the overall site layout should consider space for a future group picnic area for competition trail rides. Consider providing a standard bench or two if there are viewing areas and possibly one near the restroom. Provide a generous number of trash receptacles throughout the facility.

Dog Waste Bag Dispensers. Provide at each pedestrian entrance into the facility and at each parking lot. Reference Section 02870 for additional information.

Dumpster enclosure. Provide a standard trash dumpster enclosure in the horse trailer parking area for use by maintenance staff and equestrian users to clean up after themselves.

Lighting. Provide one foot-candle security lighting along circulation paths and in parking areas. Trailhead is designed for day use only. Do not locate light poles in the equestrian parking area where vehicles may come into contact with them. Around the perimeter of the parking area or in large curbed islands within the parking area are allowed locations.

ADA Accessibility. Design must accommodate all current and proposed Access Board rules including "Guidelines for Outdoor Developed Areas."

- Reference Section 01051 Trail Design of these standards for the basic levels of access routes, allowed slopes, etc., including a helpful chart of the options and terminology that coordinates with the following notes.

- Equestrian trailheads qualify as a "Designated Trailhead" under the Outdoor Guidelines, and although there currently do not appear to be any accessible requirements for horseback riding, the design of the horse staging area should be able to accommodate space for a future wheelchair transfer ramp connected to the accessible route.

- Accessible Route. Although it is not clear from the guidelines whether a concrete sidewalk type "Accessible Route" is required from the handicapped parking spaces to the restroom, public way, drinking fountain, the required percentage of picnic tables and benches being provided, etc. (in accordance with ADAAG 4.3), or rather that the "Outdoor Access Route" is the only required route for Trailheads. Regardless, it does seem appropriate that an Accessible Route be provided in City trailhead facilities that are located on fully improved streets, although the route needs to be located

outside of any equestrian areas.

- Outdoor Recreation Access Route. Although required for Trailheads, it does not need to run throughout the equestrian area. It is a pedestrian use route.

  "The outdoor recreation access route is a continuous unobstructed path designed for pedestrian use that connects accessible elements within a picnic area, camping area, or designated trailhead."

- Both the asphalt hikers parking lot and the chat equestrian parking lot will need the minimum required number of accessible parking spaces (on asphalt), although the equestrian lot will never need more than a pair of standard spaces, with the remaining total number of spaces for the facility being located in the asphalt lot. Note that the layout needs to anticipate expansion of accessible spaces to coordinate with the expansion of the parking lots, and keep any concrete sidewalk Accessible Route connection to the equestrian lot spaces out of the equestrian pathways.

  "If parking spaces are provided for self-parking by employees or visitors, or both, then accessible spaces complying with 4.6 shall be provided in each such parking area . . ." (4.1.2 (5)).

01060 Architectural Design

Exterior Wall Finishes (site and building). Due to frequent graffiti, and with the sole exception of glazed openings and their frames, all building wall and site wall finishes lower than 8 feet above the adjacent grade, or adjacent easily climbed feature, must have a field painted finish, or a factory painted finish that can easily be field painted to match when tagged.

Factory Finishes: The design of the surfaces and jointing must provide for any such field painting of factory finishes so that repainting of an area larger than 100 square feet is not required in order to blend with the remainder of the unaffected factory finish area.

Anti-graffiti finishes are not an acceptable alternative to paint.

Exceptions: Any exception to this painted requirement must be approved by City management above the Project Manager level prior to presenting to City Council members or the public. One possible exception is when matching existing materials for a building expansion, although even then paint should be considered.

Site walls, either perimeter or retaining, may be left unpainted if acceptable to the City project representatives and Planning Department. If left unpainted, do not apply any anti-graffiti coatings since they will need to be painted as they are tagged. Planning's requirement for a minimum of 20% contrasting material still applies, which may be accomplished by using plain (uncolored) block in combination with 20% split face or other face pattern (uncolored). If color is desired or required, paint uncolored block instead of using colored block. Planning may accept plain block 100%, with two colors of paint, one being at least 20% and a contrast from the other main color. Painted split face, slump block, or other face textures are also acceptable, although very course face patterns should be used with the acknowledgement that they can be difficult to paint over when tagged.

Occupancy Classification. When determining the occupancy classification for facilities, note that multi-purpose rooms, ballrooms, gyms and other similar spaces may be rented out to the public for events, which may include food and/or drink consumption.

Wood. Wood is NOT an acceptable finish material on the exterior of any facility (this restriction includes fascias and trim unless covered with galvanized sheet metal).

Drawings - UL Approved Assemblies. The UL approved fire rated systems must be copied from the UL book onto the drawings and the actual building systems must match the exact materials and systems shown on the UL assembly. Building and Safety will reject systems that are similar or use materials by unlisted manufacturers, even if identical or generic.

Drawings - Detailing. All details must be shown on the drawings. Do no use Blue Book, SMACNA or similar standard reference sources for design or details without also including the actual detail in the drawing set.

Energy Conservation. Do consider energy saving design and life cycle cost analysis. Each added cost item must be justified in an energy analysis as providing a financial savings and reasonable payback period.

Do consider the benefits of daylighting.

Reference other sections for additional requirements including Section 07210 Building Insulation; Section15700 Heating, Ventilating & Air-Conditioning Equipment; Section 16500 Lighting.

Loading Dock Designs. Loading dock designs requiring a sump pump are NOT allowed.

Modular Buildings (Manufacturered Trailers).
These typically are Community School offices adjacent to a school. Sometimes student classroom type areas are involved; in which case, the plans must be approved by the State Fire Marshal's Office and State Public Works. The plan check, permit and inspection process can either be run through the School District's facilities process or the City Building Department, never both. When run through the Building Department, the modular drawings are a delayed submittal (I-Hold) and must include the approval by the State Manufactured Housing Office on the delayed submittal documents.

Request a copy of the OAS example modular specification for minimum requirements.

A determination must be made concerning whether the modular building will be grade set or pit set. Grade set is typically less expensive, requiring a ramp system and skirting (a seemingly unenforced State Fire Marshal Regulation requires the skirting material to be of a non-combustible material for any modular building serving "any purpose related to public school education"). Pit set buildings need to have retaining walls constructed around the perimeter with crawl space access and ventilation, have flashing installed over any gap between the building and retaining wall, be craned into place or have temporary ramping dug and will be more difficult to relocate at a later time. Grade set should be considered unless aesthetics, client preference or regulatory agency approvals dictate otherwise. Pit set will add a minimum of $50,000 to the cost of a typical double wide modular building.

When these are placed on School District property, a Memorandum of Understanding is signed between the School District and the City that generally includes:

- City Building Services maintains the building.
- City Parks maintains the landscaping.
- Where arrangements are agreed upon through Leisure Services staff with local school representatives, utilities shall be connected to already existing school facilities, if possible and feasible. If not, the City must apply for separate service for sewer, water, electric and phone.

Tobacco Policy. Nevada state law prohibits the smoking of tobacco in any form in public buildings. The City of Las Vegas enforces a policy which is more strict, creating an environment which is both smoke-free and tobacco-free within and near any of its buildings.

> "Designated smoking areas for City facilities shall be outdoors, at least 30 feet from the building entrance or any ventilation intake source for a building. Ash urns shall be placed beyond the 30-foot limit. It is desirable to create a second smoking area away from the front entrance for employee use."

Kitchen Requirements. When the building program calls for a kitchen or food activity, reference the following guidelines for the specific Health District and Building Department requirements. The programming client will indicate which of the general kitchen types they require:

- Full Service Commercial
- Instructional Kitchen
- Warming Kitchen
- Employee Breakroom
- Trackbreak Food Area

Click here to access the kitchen guidelines.

01061 Transfer Station Design *This section is a requirement of the APWA Certification program.*

Pre-manufactured metal buildings with large open spans are recommended for transfer stations. The minimum size is 12,000 SF. Paint all exposed metal. Height should be at least 30 feet and will need to be verified with Field Operations Personnel depending on vehicle purchases and lift height of truck beds. Two roll up doors 24 feet high and 20 feet wide are recommended at the entrance. An 18" wide by 36" deep galvanized trench drain connected to a sand/oil interceptor at the entrance is required for drainage. Grate sections should be removable to allow for cleaning of the trench. Sealed concrete slab at least 6" thick with a minimum 2 % slope should be provided. Control joints should be epoxy filled. A 2" water line to a Siamese connection should be provided to allow use of automated wash out systems after sweeper dumping operations. A dry pipe sprinkler system with a heat source is required.

Provide skylights or translucent wall panels for daytime lighting. Exterior grade high-pressure sodium time clock controlled lighting is recommended.

Fan exhaust system to accommodate Uniform Building Code 1202.2.7 requires 1.5 cfm air exchanges per square foot of building or 3 air changes per hour. Fans are located on the roof at the rear of the structure as to provide optimum ventilation. It is recommended that 8 changes per hour be provided. A roof access ladder is needed to service roof mounted exhaust equipment.

Mist system nozzles are required to treat odor from leaving a building, i.e. exhaust fans and door openings. One nozzle will treat approximately 100 SF in a 30 ft high structure. Provide high pressure minimum 800 psi water misting system. The stainless steel "Piian" high-pressure fog system with an optional counteractant treatment tank is recommended as a masking agent if needed. Nozzle controls are to be controlled by a time clock. An ion exchange water softening system is used with an air compressor for purging water from the lines when mist system nozzles are not in use. A back up soft water loop should be provided if the City should decide to consider other systems.

A 5'-0" depressed concrete ramp is needed to enable a small loader to dump waste into larger vehicles for landfill transport operations. Loading dock designs must NOT rely on a sump pump to drain properly.

01062 Office & Workstation Design

This section includes all typical workstations for City of Las Vegas personnel as a city wide standard. Work station size / arrangement may vary slightly to fit into floor plans. Changes to these workstations other than described above must be approved by the City Manager.

Standard Office Workstations and Sizes:

Job Classifications	Sq. Ft.	Layout (click on hyperlink)
Office Specialist I Office Specialist II Technician / Specialist Mail Courier Agenda Technician Sr. Technician Sr. Intern / Intern Customer Service Rep Volunteer Coordinator	64 sq. ft.	• *8' x 8' Work Station*
Designer Sr. Designer Engineering Associate I / II Right of Way Agent I / II Sr. Engineering Associate Engineering Technician II Sr. Engineering Technician Architectural Technician I / II Traffic Barricade Inspector I / II Construction Project Representative Sr. Electrical Construction Inspector Sr. Planner Planner I / II GIS Analyst I / II Statistical Analyst I Graphic Artist II GIS Technician Construction Control Specialist Real Property Appraiser Sr. Graphic Illustrator Graphic Illustrator	80 sq. ft.	• *8' x 10' Work Station A*

Job Classifications	**Sq. Ft.**	**Layout** (click on hyperlink)
Secretary Publicity Specialist II Sr. Office Specialist Sr. Publicity Specialist Sr. Cultural Activities Specialist Coordinator Sr. Adaptive Recreation Leader Publicity Specialist Accountant Technician I Recreation Leader II Graphic Artist I Cultural Leader I Agenda Technician II Planning Technician Technical Systems Analyst	80 sq. ft.	• *8' x 10' Work Station B*
Structural Plans Examiner Plans Examiner Civil Engineer Construction Management Coordinator Environmental Officer Sr. Planner	100 sq. ft.	• *10' x 10' Work Station A*
Office Supervisor Administrative Assistant	100 sq. ft.	• *10' x 10' Work Station B*
Urban Design Coordinator Engineering Project Manager Project Engineer Architectural Project Manager Principal Designer Landscape Architect Sr. Statistical Analyst Principal Engineer Land Development Coordinator	137 sq. ft	• *10'-6" x 13' Work Station*
Sr. Management Analyst Administrative Secretary Management Analyst I / II Public Information Officer Field Supervisor Administrative Secretary	120 sq. ft.	• *10' x 12' Private Office*

Job Classifications	Sq. Ft.	Layout (click on hyperlink)
Planning Supervisor Plans Examination Supervisor Permits Supervisor Administrative Officer R/W & Real Property Supervisor SID Supervisor Publicity Supervisor Supervisor	140 sq. ft.	• *10' x 14' Private Office*
Planning Manager Land Development Superintendent Real Estate Manager Assistant City Traffic Engineer Administrative Manager Recreation Manager Cultural Manager Adaptive Manager Sr. Citizen Manager Fire Protection Engineer Engineering Program Manager	160 sq. ft.	• *10' x 16' Private Office*
City Traffic Engineer Assistant City Engineer Architectural Superintendent	176 sq. ft.	• *11' x 16' Private Office*
Deputy Director	198 sq. ft.	• *12' x 16'-6" Private Office*
Director	240 sq. ft.	• *12' x 20' Private Office*

The following lists are the typical components used to configure office workstations.

Systems Furniture WorkStations Typical Components.

- Powered panels
- Work Surface
- Drawer Pedestals
- Overhead Storage
- Task Lighting
- Tack Boards
- Keyboard tray
- Task chair (side chairs as required)

Private Office Furniture Typical Components.

- Task chair
- Desk
- Return
- Credenza
- Guest Chair
- File Cabinet
- Book Case
- Keyboard tray

Conference Room Furniture & Accessories.

- Large or multiple tables
- Chairs
- White board
- Cabinets

Audio / Visual Capabilities

01070 Environmental Health

Environmental Permits. The City's standard Division One contains a detailed list of who, City or Contractor, provides each of the possible environmental permits.

Review the inter-agency coordination section of the "Design Kickoff Meeting Agenda" for project specific environmental permits and regulation, many which may significantly affect the project design. The City Project Manager can provide additional information on the requirements.

Asbestos. When the work involves renovation or remodeling, an asbestos survey is required. The City will usually provide this survey and often prefers to contract abatement and demolition outside of the scope of work of the design consultant prior to the general construction. Discuss each situation with the City Project Manager.

Material Off-Gassing Rates. Specify finish materials, equipment and furnishings with formaldehyde off-gassing rates of less than 0.03 milligrams per square foot of surface area per hour in accordance with ASTM D 5116.

Clark County Health District. The Health District is pushing for installation of air curtains at exterior doors of food facilities. The City is NOT currently accepting this as a mandated code requirement and is not installing them. Coordinate any plan check comments received that appear to be outside of the published code requirements with the City Project Manager prior to making any design revisions.

01500 Project Construction Sign

Unless otherwise directed, specify one construction sign, to be provided by the contractor, per the City standard drawing. Locate the sign on the drawings, "subject to relocation as needed for the construction to proceed in the immediate area".

02001 Design Information – Site Construction

Grading. Slope limited to 5 to 1 maximum in turf areas. Other non-turf areas may be any reasonably approved slope.

Do not place berms near concrete surfaces, which are flush to the adjacent turf, hardscape, or decomposed granite surfaces. Children will use the hard surface as a starting bike acceleration area to use the berm as a jump.

Do not place berms immediately adjacent to play equipment areas, tennis courts, or other activity areas so that irrigation water runoff runs into the activity area.

Do not place trees on turffed berms. The normal turf irrigation water does not have an opportunity to soak in for the tree's use before running off.

Soil Hardening Stabilizer – Walking Paths. Where decomposed granite is used for walking paths or other uses where wheelchair access is required or may reasonably be requested by the public, use the following product or approved equal product (meeting the minimum requirements of Section 01030 Accessibility), to stabilize the surface ("firm and stable"). Unstabilized decomposed granite does not qualify as "stable" when wet (rotational test). Compacted Type II does qualify as firm and stable.
(http://www.access-board.gov/research&training/Exterior%20Surfaces/exteriorsarticle.htm)

Stabilizer by Stabilizer Solutions, Inc.
Either mix the Stabilizer additive on site with decomposed granite or provide the manufacturer's pre-mixed decomposed granite with stabilizer (available for pick-up in Phoenix, AZ.) Install in accordance with the manufacturer's recommendations and installation specification. The designer must specify the color when using the pre-mix option.

Stabilizer Solutions Inc., 205 South 28th St., Phoenix, AZ 85034, 800-336-2468,
www.stabilizersolutions.com

Another manufacturer with similar stabilizer options for various uses:
PolyPavement, P.O. Box 36339, Los Angeles, CA 90036, 323-954-22240,
www.polypavement.com

Irrigation. Design irrigation systems, drainage, and turf layouts to prevent water from:
1. Staining, spotting, or otherwise creating a noticeable pattern on adjacent materials.
2. Causing deterioration of adjacent surfaces.
3. Draining through or over surfaces, including all sporting and play activity surfaces.
4. Presenting any unsafe conditions.

Retaining Walls. Avoid all retaining walls where an alternate grading plan design can adjust the grades in slopes instead.

Retaining Wall Waterproofing. Waterproof the backside of all site retaining walls by hot mopping 2 layers of 15 pound felt, or better waterproofing system. Protect the waterproofing system from backfill with a protective board.

Grading Cut and Fill. Balance all sites where possible and obtain written permission/sign-off where not possible. Note that BLM leased sites have special restrictions in this respect, reference Section 02300 Earthwork.

Underground Utility Tracing. Provide trace wire with identification for all underground utilities installed in non-conductive pipe (sanitary sewer, storm sewer, water, swimming pools) and natural gas. Trace wire is

reach from the hard surface).

Dog Waste Bag Dispensers. Locate inside each entrance, and scattered throughout the fenced areas. At least one in each area must be ADA accessible. Provide one per acre, or fewer if park layout allows. Reference Section 02870 Site Furnishings for model number.

Trash Receptacles. Locate throughout the fenced areas, near dispensers. Separate receptacles for trash and feces. Provide one of each per acre, or fewer if park layout allows. Reference Section 02870 Site Furnishings for model number.

Note: According to the ADA Outdoor Developed Areas regulations, all trash receptacles must be ADA accessible since they see it as a health issue. There is an exception in the regulations "Where compliance would substantially alter the nature of the setting or the purpose of the facility". A maze of concrete sidewalks throughout a dog run can be argued as substantially altering the setting. Our approach is to provide at least one accessible receptacle in each area for each type provided (trash and/or feces), and to not make all receptacles accessible.

Shaded Seating. Located inside each fenced area and outside the main entrances, with accessible benches and companion spaces per the ADA Outdoor Developed Areas regulations. The shade structures may be fabric or hard shell. Picnic tables may be used for seating but tables may encourage users to bring food into the dog area, which can cause problems. The seating located outside the main entrances is intended for spectators and people (children) who came with a dog handler but are safer waiting outside the dog area. If there are budget constraints, this outside seating area may be shaded only using trees. An accessible path needs to connect all of the shaded seating to the parking. Additional seating may be provided elsewhere in the dog areas, as long as 50% of the seating in each area is accessible.

Drinking Fountain(s). Dog height combination MDF City standard drinking fountains (3 total spouts, one at dog height, one at handicap height, one at normal height), inside each fenced area if budget allows ($3,600 each). Provide one outside of the main entrances if budget doesn't allow for one inside each area. Positioned where they will not block entrances or sidewalks, on a concrete pad that is on the accessible path.

Restrooms. Located within a reasonable distance. Locate 2 to 4 tie posts outside the restrooms, ADA accessible height.

Lighting. Provide user level lighting in the area of the shade structures, entrances, and drinking fountain for evening use, utilizing the City standard user lighting controls. Locate the controls adjacent to the entry for usage upon entry, but inside the fenced area so user are not forced to leave their dog unattended to extend the lighting time. Provide one foot-candle of lighting for night security along all walking paths in the dog areas.

Other Equipment. No obstacle or obedience training equipment, no judging stands, no removable fencing between dog areas for special events. The dog run will not be rented or reserved for special events.

Signage. Reference drawings in this section for the following signs (see section 10426 for additional mounting requirements and heights):

Dog Park Guidelines. Posted inside each area readable from the shaded seating area. Signage should meet the ADA requirements for character contrast, height, stroke, spacing, etc. for easy readability but there currently are no ADA requirements for this signage. Mounting heights and locations are not fixed by code except that there should be a hard surface clear area directly in front of each sign so the sign can be approached up close. (There does not appear to be any braille requirement for any of this signage, although we may want to add some for the small/large dog gate signage if the blind begin taking their dogs to the park.)

Small Dog Area and Large Dog Area Signs. Mount one sign at each designated area on the fence next to the entrance gate.

Emergency Exit. Mount on both sides of the fence at each of the additional gates that are intended for emergency exiting only.

Dog Walkers Sign used with Dog Waste Bag Dispenser. Mount one sign for each dog bag waste dispenser installed. Ref. Dog Waste Bag Dispenser paragraph in this section for information to locate dispensers/signs.

Design Philosophy: (Largely borrowed from the "petnet" organization in Australia.)

Paying attention to the needs of dogs is a positive statement of support to dog owners in the community. Improving the quality of the recreation experience for dogs is not so different from designing for play by humans. The design psychology should have emphasis on the interplay of movement, texture, form and line. The key principles are variety, stimulation and challenge, unpredictability and interest with a view to providing a rich and varied sensory experience. A combination of open spaces for running and smaller spaces with detail should be sought.

A manicured park environment is not necessary and in fact a 'rougher' setting should be sought where possible. Demands for neatness should be resisted

Dogs will be attracted to areas with longer grass for defecating. Areas can be set aside that are mowed less frequently to allow feces to disintegrate naturally. Grass of say 10cm (4 inches) would be appropriate and have the added advantage of reduced maintenance.

Contouring. Varying contours greatly adds to the appeal of a park for dogs. It can also act as a sound barrier making it more acceptable to neighboring residents. Sites with varying slope should be sought, although not so steep that they are inaccessible for humans.

Earth mounds, hills and gullies should be retained if existing already or created artificially to give the park some atmosphere.

Landscaping. Planting adds to the interest and diversity in a park especially where the terrain cannot be modified. It can provide a textural and visual contrast to mown tracts.

Plant selection should emphasis durable plant materials. A variety of scented plants could also be considered to improve the dog's sensory experience

Other design features. Features that add to the sense of interest and challenge include ramps, hurdles, tipped logs, boulders and other agility exercises.

Movement should be sought wherever possible to enhance the dog's enjoyment of the park by provision of moving objects and choice of vegetation that moves in the wind. Sandpits, while ideal for dogs are not encouraged because of their inevitable attraction to children. Where possible, paving should be kept to a minimum. Dogs enjoy smelling their surroundings so soft surfaces that retain odors are preferable to hard surfaces.

DESIGN STANDARDS
Division 2 – Site Construction

02882 Recreational Facilities & Playground Equipment – Skateparks

General. These requirements apply to both flat slab parks with manufactured ramps, and poured in place concrete bowl types of parks, except as noted.

Design. The prime design consultant contracting with the City must sub-contract with a skatepark design specialist acceptable to the City, to assist in the design and construction of the park. The skatepark specialist is required to attend a minimum of three construction administration phase meetings: Pre-Construction (meeting with the concrete contractor prior to starting construction of the skatepark), during the application of the shotcrete (continuous inspection during all shotcrete applications), and final review punch list.

In addition, the prime consultant and skatepark specialist are required to work with the City's "in-house" skatepark representative during the design and construction.

Also, the prime consultant and skatepark specialist are to conduct at least one workshop with local skateboarders during the design, with the meeting arranged through the City representatives. Additional meetings with local skaters may be held as useful or as directed.

Skill Levels. Design skate areas appropriate to the programmed skill levels and to encourage the skill levels to occupy their intended areas, with physical separation provided between the skill levels (recommend a 10 foot minimum distance).

Sample Skill Level Ramps:

Skill Level	Height	Radius	Length
Beginner	2 feet	6'-6"	5'-1"
Beginner	3 feet	7'-6"	6'-0"
Intermediate	4 feet	7'-6"	6'-6"
Intermediate	5 feet	8'-0"	7'-5"
Intermediate	6 feet	8'-6"	8'-0"
Advanced	Over 6 feet		

Flow. The design is to provide a safe flow pattern throughout the skatepark, and to discourage all potential cross traffic. Sight lines need to provide a skater proper foresight, for example easily knowing whether small children in bowls or behind pyramids are in their path.

Skate Elements. Do not exactly repeat skate features unless the redundancy is required for skate-ability or other specific reason. Some variation in features is encouraged. Do try to provide the skater with varying challenges to make the user want to come back to the park again and again.

Accessible Layout. The design shall be in compliance with the Access-Board guidelines for Sports Facilities. At least 50% of the skatepark features should be accessible by a path not exceeding a 5% slope, including not less than one of each type of feature. The "50%" figure is a recommendation; the "not less than one" figure and the 5% pathway are minimum requirements. The remainder of the skatepark may be in inaccessible including enclosed deep bowls, except that a shallow sloped entry point must be provided for somewhere out of the bowl near a skatepark entrance point for easily rolling or lifting a gurney out of the bowl. The exception to this gurney entry point is a small bowl where such an entry point would change the fundamental nature of the activity possible in such a small bowl.

Perimeter Curb. Provide a 6-inch minimum high concrete curb at the perimeter of the skatepark area, except at entry points (may be higher to double as seating). Width to be 6 inch minimum, 12" minimum width if a fence is located above, with a slight slope on the top, so water flows away from the skatepark.

Fence. The current preference is to require a complete fenced perimeter with locking gates. Specifically,

not required for irrigation systems.

02050 Subsurface Conditions

City Procedure and Liability. The City's standard for handling the Geotechnical Report in the Contract Documents is shown below. City staff, when preparing documents in-house, include the Geotechnical Data Report and the OAS Standard Section 02050, but outside design consultants may arrange and locate the information as they best see fit, as long as it follows the requirements set out below. An example of the City's format is included in this document. If a consultant elects to reuse any of the City's format or wording, or include any of the specific language used below, they do so at their sole risk as design professionals and cannot claim any release of liability to the City or others for such use.

The consultant's work shall be worded so that virtually all risks for underground unknown conditions are placed on the contractor. There should be no extra charges during construction for caliche, rocks or other natural materials. Reference the sample specification attached to this Section for wording and exceptions.

The geotechnical report needs to include a generous number of borings, to a generous depth, so the contractor can properly bid these unknown conditions without inflating the bid price to cover the worst possible condition. If the borings are taken in the summer, and there is any indication of water or moisture, additional borings should be taken in the winter to compare water depths that may be encountered during construction. A fluctuation in water table higher than that shown in the GDR can result in a claim.

If you would normally do 4 or 5 borings for a particular project, double that number to 8 to 10. Take at least one boring to 20-25 feet or until you hit water if that is less, regardless of the needs of your structural improvements. This will help reduce the unknowns for the bidding contractor, inflated bids and possible future claims. For example, a typical fire station requires 6 to 10 borings, all at 20 feet.

Geotechnical Reports. Whether provided by the City or included in the prime consultant's scope of services, the geotechnical engineers report needs to be split into two sections: (1) a Geotechnical Data Report (GDR), which contains only data on boring logs and results of lab tests, and (2) a Geotechnical Interpretive Report, which sets forth the interpretation and design recommendation of the data. Part (1) is included in the contract documents, while part (2) is used by the consultant for the Project design and is not included in the contract documents. Do not make reference in the drawings to either report. All of the design information is to be explicitly shown on the drawings and in the specifications. Do not provide any quantity estimates or allowances.

The following is a clip from the OAS Geotechnical Consultant Contract:

1. **Geotechnical Data Report** is a compilation of geotechnical information about the Project site discovered during investigations of the site required for preparation of the Geotechnical Interpretive Report. This report may include boring logs and tests, but excludes interpretations and recommendations.

   The Geotechnical Data Report (GDR) will be included and incorporated into the Contract Documents, with the following instructions to the contractor:

   This Geotechnical Data Report is provided for inspection and review only. The Owner cannot and does not warrant the accuracy or reliability of the information included in the Geotechnical Data Report. Such borings and data are subject to sampling errors. The Geotechnical Data Report was prepared for design purposes and may not provide sufficient data for bid preparation by some contractors. Bidders and the Contractor are solely responsible for assumptions, deductions, interpretations and conclusions they may make or obtain from any such information. The information contained in the Geotechnical Data Report is not to be used by the Contractor for any design work including the design of temporary construction facilities. The Geotechnical Data Report is provided in the Contract Documents with the express understanding of the preceding.

2. **Geotechnical Interpretive Report** is the geotechnical investigation report prepared for the design of this Project including the initial report, attachments, and appendices. This report may include boring logs, tests, interpretations and recommendations.

The Geotechnical Interpretive Report (GIR) shall not be made available to bidders or incorporated as a part of the Bid Documents or Contract Documents. It is understood that information contained in the Geotechnical Interpretive Report is to be solely used for the Owner's design and estimating purposes and not by others for any purpose including construction. Bidders and the Contractor are solely responsible for assumptions, deductions and conclusions they may make or obtain from any such information.

Site Investigation. The contractor is not given a specific Right of Entry to conduct his own sub-surface investigations by borings or pot-holing. In the absence of such a right, it is important that the geotechnical report be complete enough as to the quantity, location, and depth of borings to avoid both extra bid price padding for unknowns and possible contractor claims. If the borings indicates ground water, caliche, or other such obstacles, additional borings may be needed.

No Differing Site Conditions Clause. Except for the limited exception for man-made items in the sample specification section attached, do not include a subsurface differing site conditions clause. The contractor bears the risk for almost all unseen or unanticipated subsurface condition associated with performing the work.

EXCEPTIONS: Large Projects and Those Requiring Extensive Underground Work. The consultant needs to discuss with the City the possibility of including a Differing Site Conditions Clause and Geotechnical Baseline Report for projects that require extensive underground work. The Baseline Report would be used to establish the subsurface conditions for bidding purposes, with the understanding that if the actual conditions are more adverse than the baseline, the City will consider additional compensation. This would be appropriate for a project with substantial earth removal, extensive underground site utility runs, an underground garage, etc. Without such a provision, these types of projects may result in substantial price padding by the bidders to cover the unforeseen subsurface risks.

Attachments:

City's sample Section 2050 Subsurface Conditions

Legal References:
"Site Investigations: A Guide"
"The Use of a Differing Site Condition Clause in International Civil Engineering Construction Contracts"
"Below the Baseline"
"A Type I Differing Site Conditions Claim: Analysis of the Reasonable Reliance Element"
"Analysis of a Type I Differing Condition Claim, An Empirical Study"
Differing Site Conditions, sample clauses if and when allowed.
"Differing Site Conditions"
"When Disclaimers are Inaccurate"
"Withholding of Superior Knowledge"

02300 Earthwork

Reference Section 02050 Subsurface Conditions for additional Earthwork related issues such as the Geotechnical Report.

Reference Section 02001 Design Information on maximum slopes and other general site information related to Earthwork.

Soil Export from BLM Leased Sites. The following requirements must be included in the construction documents prepared for all projects located on BLM leased land.

Verify with the City project manager whether a particular project is on BLM land. Additionally, if the site cannot be balanced and export will be required, work with the City project manager to indentify a suitable BLM export site, obtain the required export permit from BLM, show where and how the export is to be left on the export site, and so indicate in the bid documents. Also include the following standard language when BLM sites are being utilized, regardless of whether export is anticipated:

> Unsuitable And Surplus Soil Disposal From BLM Sites. Existing material excavated from the site shall not be removed from the site without the written permission of the U.S. Department of the Interior, Bureau of Land management (BLM) and the Owner. The Contractor shall be responsible for scheduling, coordinating and obtaining inspections and permission by BLM to remove and relocate existing excavated material from the site, for removing and relocating existing excavated material (as required elsewhere in the contract documents) under the conditions imposed by BLM, and for all associated costs. Contact the BLM District Office, 4765 Vegas Drive, Las Vegas, Nevada, (702) 647-5000, for information and requirements for removing existing excavated material from the site.
>
> Prior to obtaining and documenting permission for removal, unsuitable existing material excavated shall be stockpiled on the site in a location agreed to by the Owner. The Contractor shall relocate stockpiled material within the site to prevent delay in the progress of the Work, when required.
>
> The Contractor shall submit a copy of BLM's written permission to remove and relocate existing excavated material from the site along with related BLM conditions to the Owner prior to removing any existing excavated material from the site. The Contractor shall promptly submit copies of correspondence with BLM pertaining to this project to the Owner.
>
> The Contractor shall be responsible for fees, fines and penalties assessed on the Contractor and the Owner for failure to obtain written BLM permission to remove existing excavated material and for failure to comply with BLM conditions imposed for removal and relocation of existing excavated material from the site. The Owner shall be entitled to withhold from payments amounts equal to the actual, or estimated, fees, fines and penalties to be assessed, and other related costs, until such time as they are settled. The Owner shall have the right to deduct from the contract amount by change order, the cost of any fees, fines and penalties assessed against the Owner when not settled by the Contractor within 30 days.

City of Las Vegas, Land Development Section, Standard Grading Notes.

The standard grading notes that are required on all civil drawing submissions to the Land Development Section for off-site and grading permits are different for projects managed by the Office of Architectural Services. The consultant must use the following Grading Notes:

2.5 City of Las Vegas Grading Notes (OAS Plans Only)

1. In the event that any unforeseen conditions not covered by these notes are encountered during grading operations, the Owner/Engineer shall be immediately notified for direction.

2. It shall be the responsibility of the Contractor to perform all necessary cuts and fills within the limits of this project and the related off-site work, so as to generate the desired subgrade, finish grades and slopes shown.

3. Contractor shall take full responsibility for all excavation. Adequate shoring shall be designed and provided by the Contractor to prevent undermining of any adjacent features or facilities and/or caving of the excavation.

4. The Grading Contractor is responsible to coordinate with the owner to provide for the requirements of the project Storm Water Pollution Prevention Plan (SWPPP) and associated permit.

5. Contractor shall grade to the lines and elevations shown on the plans within the following horizontal and vertical tolerances and degrees of compaction, in the areas indicated:

	Horizontal	Vertical
A. Pavement Area Subgrade	0.1'+	+0.0' to -0.1'
B. Engineered Fill	0.5'+	+0.1' to -0.1'

Compaction testing will be performed by the owner or his representative.
Compaction shall comply with the requirements of the Engineer.

6. All cut and fill slopes shall be protected until effective erosion control has been established.

7. The use of potable water without a special permit for building or construction purposes including consolidation of backfill or dust control is prohibited. The Contractor shall obtain all necessary permits for construction water.

8. The Contractor shall maintain the streets, sidewalks and all other public right-of-way in a clean, safe and usable condition. All spills of soil, rock or construction debris shall be promptly removed from the publicly owned property during construction and upon completion of the project. All adjacent property, private or public shall be maintained in a clean, safe and usable condition.

9. In the event that any temporary construction item is required that is not shown on these drawings, such item shall be provided as directed by the City Engineer at no expense to the City of Las Vegas. Temporary construction includes ditches, berms, road signs and barricades, etc.

02500 Utility Meters

Natural Gas Meters. Lochinvar water heaters and/or boiler units are usually specified for City swimming pools and may also be for building systems that use hot water heat.

Unique to Lochinvar heaters is the requirement to provide a medium pressure meter from Southwest Gas even though the unit is low-pressure.

Specify a medium pressure meter be installed by Southwest Gas Corporation and for the contractor to install a gas regulator as called out below or equal.

> When the low-pressure (7inches) Lochinvar Heaters are used for buildings or pools it requires a medium-pressure (5 pound) gas meter provided by SWG. The owner or contractor must install a Gas regulator after the meter and before the heater. The low-pressure meter provided by SWG does not have a large enough orifice to allow the flow of gas to operate the Lochinvar heaters. According to SWG the orifice in the low-pressure meter cannot be changed.

The gas regulator used successfully on the Doolittle Lochinvar pool heater is an "American 1805".
The gas regulator used successfully on the Baker Park Lochinvar pool heater is a "Fisher Controls 5202".

Example letter to SWG

John Wright
Senior Account Representative
Southwest Gas Corp.
4300 West Tropicana
Las Vegas, NV 89103

Subject: Use of Medium Pressure Gas for _____.

John,

We have specified a Lochinvar pool heater on this project. As you know it cannot operate on the 7" low-pressure gas meter due to lack of flow through SWG regulator at start up. Lochinvar units require medium pressure (~5 psi) natural gas meter for the system to operate.

Please have the medium pressure meter installed. The City will provide a regulator on our side of the meter to meet pressure and flow requirements for our equipment.

If you have any questions or require any additional data, please do not hesitate to call on us.

Thank again John, for all your help. It is always a pleasure working with you at Southwest Gas.

Sincerely

_____

02535 Synthetic Turf

Standards Common to All Applications:

The specifications must define the parties involved in the work of this section and use consistent terminology throughout. These design standards use Manufacturer and Builder in coordinate with the member definitions of the Synthetic Turf Council (Material Manufacturing Supplier and Builder).

- **Manufacturer**: The Manufacturer is the company providing the rolls of turf for the Project. This may or may not be the mill weaving the artificial grass yarns. They generally also provide the infill and other accessories as a system. The approved Manufacturers are listed in these design standards. A contractor's license is usually not required of the Manufacturer depending on the scope of their on-site work. The Manufacturer may contract the purchase with the General Contractor or Subcontractor at any tier. The Manufacturer and Builder may be the same party.

- **Builder**: The Builder is the company providing the experienced workers together with their experienced foremen, supervisors and management oversight, who provide a complete installation of the turf and its accessories including but not limited to accepting the subsurface preparation, placing, anchoring, and seaming the turf and striping, placing the infill, and providing the close-out materials, manuals, and maintenance training. It is assumed that grading and concrete perimeter curbs are work included in other specification sections. The Builder may be a properly licensed General Contractor or Subcontractor at any tier or they may be able to acquire the experience and manufacturer certification by partnering with another company, as long as the installation for this Project is performed by the company and personnel with the required experience and certification, and the on-site work is performed in compliance with the State of Nevada licensing regulations.

- **Experience**:
  - The Manufacturer must have been in the primary business of providing synthetic turf materials for more than five (5) years.
  - The Builder must provide evidence acceptable to the Owner of at least ten (10) similar, successful synthetic turf installations.
  - The Builder must be certified by the Manufacturer to install the provided products.
  - It is the General Contractor's responsibility to verify the required licensing, experience and other contractual requirements of the Manufacturer and Builder prior to accepting or submitting bid proposals, or contracting with any of them. Should the Manufacturer and/or Builder fail to meet the minimum requirements or any contractual obligations, the General Contractor must provide a substitute meeting the requirements at no additional cost to the Owner.
- **Bid Proposal Forms**: The bid proposal form needs to require the following information be provided with the initial bid to help determine qualified bidders and discourage bid shopping:
  Manufacturer: (company name)
  Builder: *(each may be a different company name)*
  Installation Experience: (company name)
  Manufacturer's Certification: (company name)
  Contractor's License: (company name and license number)

- **Testing**: Contractor to pay for field-testing by an independent third party of the following tests upon completion and prior to acceptance: pile height ASTM D418, depth of infill ASTM D1335, and G-max ASTM F1936. The results are to be sent directly to the Owner.

- **Extra Materials**: For installations over 5,000 square feet, a minimum of one percent of the material shall be incorporated into the site design to harvest for future repairs or patching. This shall be installed subject to conditions, similar to the prescribed installation so that wear and changes due to weather will

match the prescribed installation. The harvest area may be anchored by moveable wood curbing instead of concrete curbs. The Owner does not want any fabric scraps or other spare materials for future repairs.

- **Maintenance & Special Equipment**: The Builder will provide training for City of Las Vegas maintenance personnel in the care and maintenance of the installed product. If special maintenance equipment is needed, the specification for this work shall include the equipment requirement and the consultant shall provide on-site storage for this equipment in the design.

Require the following equipment for each project containing synthetic athletic fields.
Grooming: Greensgroomer Model 720 SDE with Extension Wings Model 724 SD and Greensgroomer Model STR Spring Tine attachment.
Sweeping: Minuteman International Parker Estate Master consisting of three Parker Suburbanite Sweepers Model SU8336 hitched together.

- **Warranty**: Specify a minimum warranty of 8 years. Do not specify a bond or insurance to cover the extended warranty period. Do not require a separate signed closeout form for this purpose in the specification.

Require in the specifications that the General Contractor, Builder, and Manufacturer guarantee the synthetic turf and associated work remain free from all defects, due to faulty or defective materials and workmanship for a period of 8 years. Sample specification language:

> The General Contractor, Builder and Manufacturer do hereby guarantee the synthetic turf materials, workmanship, and associated work including but not limited to:
> - premature wear of the synthetic fabric. Pile fiber weight shall not be reduced by more than 50% over the warranty period.
> - color fastness of the fabric, striping, and markings,
> - infill materials. Normal additional infill required after acceptance will be provided by the Owner. The minimum required G-max rating per ASTM F-355 shall be maintained over the warranty period. G-max testing over the warranty period will be arranged and paid by the Owner, excepting tests failing to meet the minimum requirement and subsequent retests to demonstrate successful repairs shall be paid by the Contractor.
> - curbing, blocking, and anchoring attachments,
> - seaming whether glued, sewed or other method,
> - base and sub-base materials over which synthetic turf is applied

> from all defects, due to faulty or defective materials and workmanship for a period of eight (8) years. The warranty coverage shall not be prorated. The Project contractors, Manufacturer, and Builder agree to provide for the Owner's benefit any warranties or guarantees available from material manufacturers or others associated with the synthetic turf system materials provided.
>
> The General Contractor, Builder, and Manufacturer also guarantee that during the warranty period they will, at their own expense, make or cause to be made such repairs to, or replacements of said work, by synthetic turf servicemen approved by the Manufacturer to repair or install the accepted system, in accordance with the Manufacturer's and material manufacturer's recommendations and standards as are necessary to correct faulty and defective work and/or materials which may develop in the work including, but not limited to:
> - fraying,
> - delamination,
> - exposed edges,
> - stretching, ridges, wrinkles,
> - splits, rips, tears,
> - warped and /or loose seaming and attachments

> in a manner pursuant to the total anticipated life of the system and the best standards applicable to the particular type, in value and in accordance with construction documents as are necessary to maintain said work in satisfactory condition, and further, to respond on or within seven (7)

calendar days upon proper notification of defects by the Owner or Consultant. Should only certain areas of the turf require replacement, new materials shall match the previously installed materials in all respects necessary for play and appearance acceptable to the Owner, or the entire surface shall be replaced.

The Builder and Manufacturer's guarantee shall be limited to the scope of work they each provided for the Project. The General Contractor's guarantee shall cover the work of the entire system regardless of the coverage actually provided by the Builder, Manufacturer, or others.

This guarantee does not extend to: (1) damage resulting from accident, force majeure, misuse, abuse, and neglect or from other than the intended normal and ordinary activities and uses which include but are not limited to football, soccer, baseball, softball, lacrosse, field hockey, special events and concerts including the use of portable chairs, (2) damage resulting from failure to maintain the system in accordance with the maintenance and use instructions provided, (3) damage resulting from repair or attempted repair by anyone other than an experienced serviceman, and (4) damage due to external causes which include the application of chemicals or cleaning agents, vandalism, fire, flood , windstorm, and acts of God.

- **System Design**:
  - Provide below grade, quick coupler hose bibs. Install a minimum of one, then one per 1000 square feet up to 20,000 square feet, then one per 5,000 square feet.
  - Edges must be anchored to flush concrete curbing and detailed in the drawings showing the specific conditions of this Project.
  - Drainage design shall be surface sheet flow unless otherwise directed by the Owner or site conditions require below grade drainage.

- **Turf Permeability Specification** (common to all applications)
  - Base to meet ASTM F1551, Permeability to Water, 14 inches per hour.
  - Shock Pads (when used) to meet ASTM F1551, Permeability to Water, 10 inches per hour.
  - Backing Material to meet ASTM F1551, Permeability to Water, 10 inches per hour.
  - Total Installed System to meet ASTM F1551, Permeability to Water, 10 inches per hour.

- **Submittals**
  - Submittals for the proposed product shall be submitted as part of the normal submittal process, after award and prior to any work.
  - Samples of synthetic turf, both with and without infill, and striping color sample.
  - Sample of infill.
  - List of required project experience with project description, location, turf area, product installed, year completed, project owner's name, address, and phone number, name of the party directly contracted with to perform the work.
  - Shop drawings showing seaming layout, striping, and construction details including seaming method.
  - Sample standard warranty information offered by manufacturers or suppliers that may be in addition to the warranty required by this section.
  - Product literature and reports about the system, fabric, backings, yarns, glues, infill and other components in sufficient detail for the Owner to determine the acceptability of the products including MSDS and ASTM third-party testing results as are customarily required and provided for this industry.
  - Resumes of the installation team.

Landscape Applications:
- The material should have the look and feel of natural grass.
- Base materials compacted to 90%+.
- If the turf is to be located adjacent to playground equipment, include a pad with a total installation G-

max rating under 150.

- Approved Manufacturer:
  - Grass Tex, Sport Lawn or St. Augustine. Internet www.grass-tex.com, local sales representative Kathy Kennedy, Sport Lawn, LLC, 702-367-7767.
  - ProGreen, LS150 or RT560. Internet www.progreen.com, sold by Forever Green, 619-283-0764.
  - SprinTurf, LawnScape. Internet www.sprinturf.com, 877-686-8873.
  - SporTurf, TurfLawn. Internet www.sporturf.com, no known local representative.
  - FieldTurf, Internet www.fieldturf.com; Las Vegas Sales Michael Hackney, 376-4244, fax 253-9570, internet www.fieldturfofnevada.com; San Diego Sales, Tim Coury, 760-635-2504, e-mail tcfieldturf@cox.net.
  - Sportexe, Tackle Turf with XP Yarn (polyethylene). Internet www.tackleturf.com, Sportexe, Ontario, Canada, Craig Edwards, 905-892-6000.
  - Any company Certified by the Synthetic Turf Council as a (1) Builder or (2) Material Manufacturing Supplier who is in the business of manufacturing woven turf products (footnote 5).

Landscape Areas Adjacent to Playgrounds:

- The material should have the look and feel of natural grass.
- Base materials compacted to 90%+.
- Include a pad with a total installation G-max rating under 150.
- Approved Suppliers:
  - General Sports Turf, Play Safe. Internet www.generalsportsturf.com, no known local sales representative.
  - Grass Tex, Landscape Turf. Internet www.grass-tex.com, local sales representative Kathy Kennedy, H20-Less Lawn & Turf, LLC, 702-505-4098.
  - SprinTurf, SafTurf. Internet www.sprinturf.com, 877-686-8873.
  - Syn Lawn. Internet www.synlawn.com, Las Vegas Sales, George Neagle, 702-792 LAWN (5296), 702-349-2561 cell.
  - Sportexe, Tackle Turf with XP Yarn (polyethylene). Internet www.tackleturf.com, Sportexe, Ontario, Canada, Craig Edwards, 905-892-6000.
  - Any company Certified by the Synthetic Turf Council as a (1) Builder or (2) Material Manufacturing Supplier who is in the business of manufacturing woven turf products (footnote 5).

Playground Applications:

- Comply with ASTM F 1292, Impact Attenuation of Surface Systems Under and Around Playground Equipment.
- A shock pad of at least ¾" shall be used on all installations.
- Yarn length of ½ inch to 1 ½ inch, ASTM D 418.
- Pile weight of 33-oz/square yard or more, ASTM D 5848.
- Either sand infill or turf product designed to not need infill material. (No rubber infill.)
- Approved Suppliers:
  - General Sports Turf, Play Safe. Internet www.generalsportsturf.com, no known local sales representative.
  - Grass Tex, Landscape Turf. Internet www.grass-tex.com, local sales representative Kathy Kennedy, H20-Less Lawn & Turf, LLC, 702-505-4098.
  - SprinTurf, SafTurf. Internet www.sprinturf.com, 877-686-8873.
  - Sportexe, Tackle Turf with XP Yarn (polyethylene). Internet www.tackleturf.com, Sportexe, Ontario, Canada, Craig Edwards, 905-892-6000.
  - Any company Certified by the Synthetic Turf Council as a (1) Builder or (2) Material Manufacturing Supplier who is in the business of manufacturing woven turf products (footnote 5).

Standards Common to Baseball, Football, Soccer, and LaCrosse Applications

- Attain a G-max of less than 175 over the life of the system, ASTM F 1936.
- Seams may be stitched or glued, although stitched is preferred.
- Provide a fence around all installations, or other means of preventing traffic on the fields. Verify with city whether fields need to be locked down. (See Section 02825)
- Provide no pets allowed signs. (See Section 10426)
- All lines and markings are to be inlaid or tufted with yarn made of the contrasting fiber. Painted or dyed yarn is not allowed.
- Pile weight of 40-oz/square yard or more, ASTM D 5848.
- Infill of rubber or rubber and rounded-sand mixed to meet STC Performance Properties (footnote 4).
- Sub Grade and Base
  - Obtain a geotechnical report to specify the sub grade preparation necessary to avoid future grade changes and to allow for drainage.
  - Undocumented fills or fills compacted to less than 90% to be removed down to native soil and re-compacted to 90%+. If fills are present, identify the extent and locate the work on the drawings.
  - Install a geo textile layer on top of the sub grade.
  - Base graded level to +- ¼ inch in 10 feet. This may require a thin layer of fine material.
  - Finished grade must slope away from the centerline, length wise, at ½% to 1%. Other industry standard slope options for fields may be considered as needed to adjust to site topography.

- Base Material:
  - Base to be 6" of Type II compacted to 95% or more, or combination of Type II with sand overlay as recommended by the turf manufacturer.

  Specify the following systems where field drainage is an issue:
  - Base to be 8" of crushed stone compacted to 95% or more, or a 2"+ layer of crushed stone over 6" of Type II compacted to 95% or more.
  - Consider the use of perforated pipe to assist in drainage of the base away from the field.
  - Base to meet ASTM F1551, Permeability to Water, 14 inches per hour.

Baseball Applications:

- Yarn length of 1 inch to 1-½ inches infield, 2" outfield, ASTM D 418.
- Yarn to be of polyethylene or polypropylene.
- Approved Suppliers:
  - A-Turf. www.aturf.com; 888-777-6910.
  - FieldTurf, Internet www.fieldturf.com; Las Vegas Sales Michael Hackney, 376-4244, fax 253-9570, internet www.fieldturfofnevada.com; San Diego Sales, Tim Coury, 760-635-2504, e-mail tcfieldturf@cox.net.
  - General Sports Turf, Baseball/Softball. Internet www.generalsportsturf.com, no known local sales representative.
  - Grass Tex. Internet www.grass-tex.com.
  - SprinTurf. Internet www.sprinturf.com, 877-686-8873.
  - Sportexe. Internet www.omnigrass.com, Sportexe, Ontario, Canada, Craig Edwards, 905-892-6000.
  - Any company Certified by the Synthetic Turf Council as a (1) Builder or (2) Material Manufacturing Supplier who is in the business of manufacturing woven turf products (footnote 5).

Football, Soccer, LaCrosse Applications:

- Yarn length of 2 inches, ASTM D 418. (2-1/2" is preferred for football.)
- Yarn to be of polyethylene or polypropylene or a blend of materials with the longest fibers of polyethylene or polypropylene.
- Meet the STC Guidelines (footnote 4) for a tufted infill system or be a FIFA certified product (footnote 3).

- Approved Suppliers:
  - A-Turf. www.aturf.com; 888-777-6910.
  - FieldTurf, Internet www.fieldturf.com; Las Vegas Sales Michael Hackney, 376-4244, fax 253-9570, internet www.fieldturfofnevada.com; San Diego Sales, Tim Coury, 760-635-2504, e-mail tcfieldturf@cox.net.
  - Grass Tex. Internet www.grass-tex.com
  - Sports Technology. Internet www.sti-sports.com, no known local sales representative.
  - SprinTurf. Internet www.sprinturf.com, 877-686-8873.
  - Sportexe. Internet www.omnigrass.com, Sportexe, Ontario, Canada, Craig Edwards, 905-892-6000.
  - Any company Certified by the Synthetic Turf Council as a (1) Builder or (2) Material Manufacturing Supplier who is in the business of manufacturing woven turf products (footnote 5).

Athletic Field Striping Colors:

- Single use sports field, white.
- Multiple use sports striping:
  Football, white.
  Soccer, yellow if with Football. Soccer, white if with LaCrosse.
  LaCrosse, womens, red.
  LaCrosse, mens, blue. Mens, white if only with womens LaCrosse.

Note that most LaCrosse lines are only 2" wide.

	Football only	Football with	Soccer only	Soccer with	LaCrosse only
Football	White	White			
Soccer		Yellow	White	White	
LaCrosse, Womens		Red		Red	Red
LaCrosse, Mens		Blue		Blue	White

Corner-kick Flag Receivers: (Soccer) Corner-kick flag receivers shall be aligned at the back edge of the 4 inch white stripe at the four corners of each soccer field. Install receiver in small concrete footing (min. 12"Wx12"Lx18"D). Top of concrete footing shall be installed flush with the compacted type II aggregate base. Corner-kick flag receiver shall be cast in concrete footing at the finish grade elevation of the pile height of the synthetic turf. Synthetic turf shall be installed over top of the concrete footing, and the rubber infill placed up to the edge of the flag receiver. Mounding at the Corner-kick flag receivers is prohibited. Fill flag receiver with masonry sand to stabilize flag insertion. One known Corner-kick flag receiver vendor M.A.S.A. Mid-American Sports Advantage. www.masa.com/ or equal under the substitution requirements of Section 01600.

Synthetic Athletic Field Irrigation Water Requirements (Soccer, Football, Lacrosse):

Pop-Up Heads: Install a pop-up rotor sprinkler head system (show on plan) around the perimeter of each sport field. The system shall be installed such that the heads can be activated automatically with a hand-held remote control unit (TRC Commander) or by timer. All heads, piping and irrigation components shall be located outside of the synthetic turf area at the carpet edge. No piping will be allowed under the turf. Installation of this system and related work shall comply with the irrigation design standards set forth in 02810-Irrigation Systems CLV Design Standards. The purpose of this system is for cleaning, not cooling. It is understood that this system may not be capable of 100% field coverage.

Quick Couplers: For synthetic turf areas where radius requirements (throws) exceed those of pop-up rotor sprinklers, install one quick coupler on each end of the field behind the goals. The quick couplers system shall be installed such that they can be activated manually or automatically independent of the pop-up head system. Quick coupler valve: Rain Bird Model 7 (1.5") or approved equal, installed at finish grade in

a round concrete valve box. All irrigation components associated with the quick coupler system shall be located outside of the synthetic turf area at the carpet edge. No piping will be allowed under the turf. Installation of this system and related work shall comply with the irrigation design standards set forth in 02810-Irrigation Systems CLV Design Standards. The purpose of this system is for cleaning, not cooling, the areas of the field not covered by the pop-up system.

~~The following cooling options are not currently being included in the design due to their marginal cooling benefits.~~

~~In addition, athletic fields may be considered during the design for one or both of the following cooling options as directed by the OAS Project Manager.~~

~~Pop-Up Heads: Install a pop-up rotor sprinkler head system (show on plan) around the perimeter of each sport field per the provided detail. The system shall be installed such that the heads can be activated automatically with a hand-held remote control unit. (TRC Commander) All heads, piping and irrigation components shall be located outside of the synthetic turf area at the carpet edge. No piping will be allowed under the turf. Installation of this system and related work shall comply with the irrigation design standards set forth in 02810-Irrigation Systems CLV Design Standards.~~

~~Rain Gun Assembly: For large synthetic turf areas where radius requirements (throws) exceed those of pop-up rotor sprinklers, the installation of a quick coupler loop system (Rain Gun Assembly) is required. Install the quick coupler loop (show on plan) around the perimeter of each sport field. The system shall be installed such that the rain gun heads can be activated manually or automatically based upon the system design. The Rain Gun Assembly shall consist of a part-circle Rain Guns: Rain Bird SR-3003-NFT (2" Female NPT inlet) – 100 GPM at 50 PSI, 2" x 1.5" brass threaded reducer bushing, quick coupler valve key: Rain Bird Model 7K (1.5") or approved equal, quick coupler valve: Rain Bird Model 7 (1.5") or approved equal, installed at finish grade in a round concrete valve box. Require the contractor to furnish the required number of Rain Guns, reducer bushing and valve keys. All irrigation components associated with the quick coupler loop system shall be located outside of the synthetic turf area at the carpet edge. No piping will be allowed under the turf. Installation of this system and related work shall comply with the irrigation design standards set forth in 02810-Irrigation Systems CLV Design Standards.~~

Sample Turf System Specification: The attached sample specification from a previous City project is provided to assist the Consultant in determining what the City is expecting in a specification. Note that this specification was used for a football field using 2-1/2" fiber that is not appropriate for other applications. Portions of the document may be used by the Consultant at their sole risk. Note that the required maintenance equipment requirement has been revised in these standards since this sample specification was used. Link to sample specification.

Yarn Specification: Link to information about yarns.

Footnote References:

1. Clark County Parks and Community Services, RFP – Synthetic Turf Specifications, Clark County Synthetic Turf Specifications, 2003.
2. Federation Internationale de Football Association (European Soccer) FIFA Guide
3. FIFA Licensees.
4. Synthetic Turf Council, "Guidelines for the Essential Elements of Synthetic Turf Systems", latest version. (Link to an outdated copy of the STC Guidelines, 2003 version.)
5. Synthetic Turf Council Certified members list is available at http://www.syntheticturfcouncil.org/ With City permission, in lieu of STC certification as a Builder or Material Manufacturing Supplier, other suppliers may be approved if certified by a City acceptable independent third party testing agency that it meets the current minimum requirements of the Synthetic Turf Council for Certification, with such certification work arranged and paid by the potential supplier and the

process performed without affecting the project schedule.

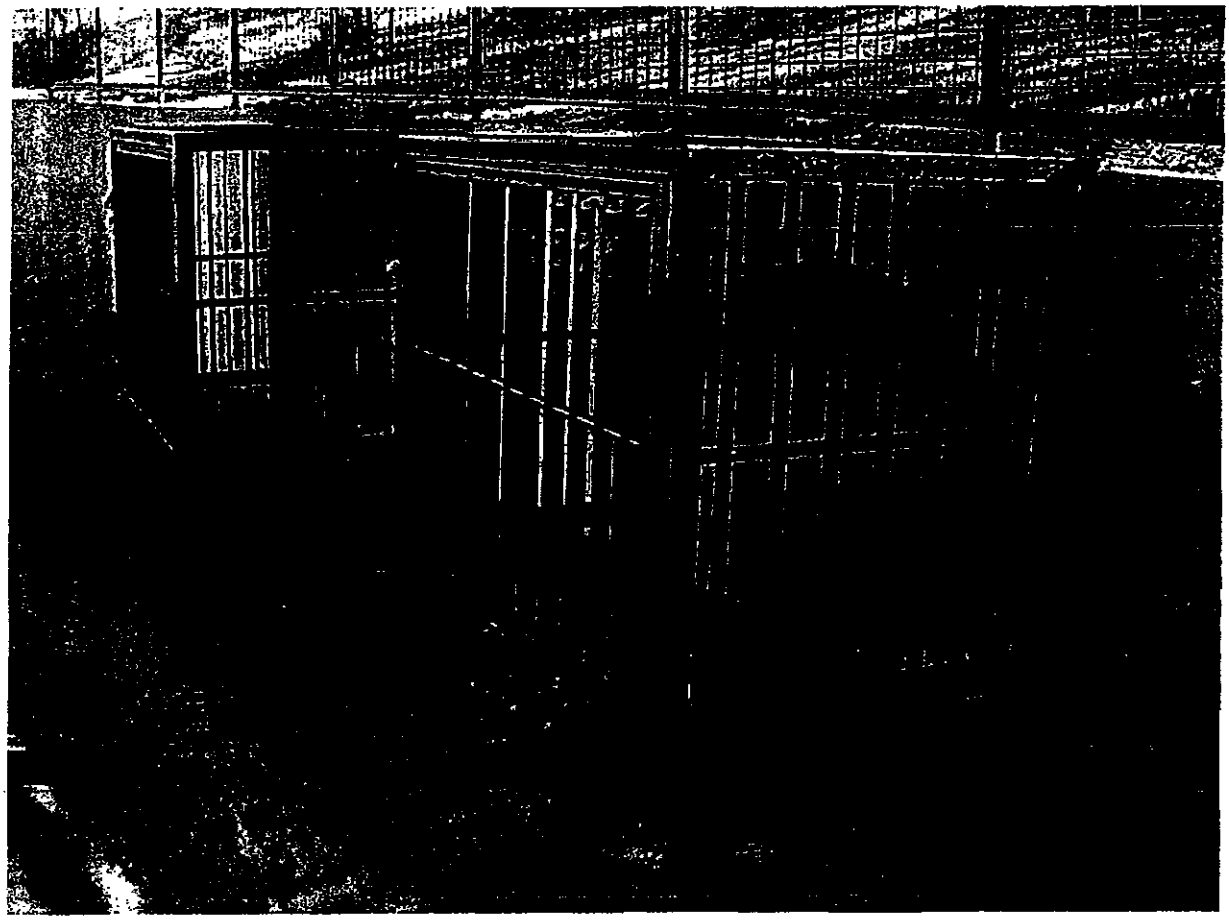
6. UEFA, Union des Europeennes de Football Associations, comprehensive review of artificial turf, UEFA Manual.
7. OAS Product Survey, 2003, not updated, data.

02600 Drainage & Containment

Base Drainage. Detail all ferrous metal (whether galvanized or not) attachments at grade to provide positive drainage, via sloped concrete or similar surface, away from the metal for irrigation over spray and other water. This includes the base of bollards, dumpster enclosure gate posts, park gate entrance posts, drinking fountains, fence posts, play equipment, shade structure posts, signage posts if embedded in concrete, etc.

No Sump Pumps. Reliance on sump pumps to drain exterior areas is NOT acceptable design.

Drainage Containment. To limit unauthorized access into drainage pipes and provide a larger area for debris to catch without blocking water flows, provide locking containment similar to the following design.



02815 Fountains, Pools & Water Displays

Do no suggest any water features in the project design unless specifically provided for in the program requirements. Decorative fountains are not permitted unless specifically directed to be included.

Related Work: Section 13152 Swimming Pools & Equipment.
Section 13300 Splash Pad Equipment.

02825 Fences, Gates & Hardware

Traffic Bollards. Provide the minimum quantity of removable traffic bollards where traffic areas abut flush wide pedestrian/maintenance vehicle paths and where maintenance/security vehicular traffic may cross pedestrian bridges not rated for such loads (see Section 05001 Metals). Curbing and wheel stops are preferred over using bollards.

Landscape Equipment Access. Note that turf mowers are 72 inches wide. Provide proper gate widths for landscape equipment and emergency vehicle access to all fenced areas.

Design Pattern Coordination. Design patterns located on vehicle gates, man gates, restroom gates and concession building gates are at the discretion of the Consultant to design for the Project Manager's approval, although they shall all be coordinated to match when located on the same site or project.

Gates Drawing References.

- See Section 01040 for drawings of "Prototype Trash Enclosure" gate design.
- See Section 01050 for drawings of "Restroom Gate Design" and "Utility (Pump) Enclosure Gate Design".
- See Section 02882 for drawings of "Baseball Dugout Gates", "Tennis Court Gates", "Roller Hockey Gates" and other sports related gate designs.
- See this Section 02825 for drawings of "Vehicle Gates" and "Chainlink Gates".

Fire Department Access. Portions of the site that are secured by locking gates and are required to be accessible to the Fire Department must be provided with a means for the Fire Department to gain entry. Typically, any padlock and chain method is acceptable, provided that the chain is exposed for cutting by the Fire Department. Electronic opening gates must be provided with a receiver loop embedded in the pavement and a permit requirement for such installations is that two transmitters be provided to the Fire Department for each electronically controlled gate. Consultation with the City's Fire Prevention Office will be required to determine the appropriate solution for each project.

Vehicle Gates - Design Criteria. .

Design. See the City standard for gate design and layout. The design pattern shown on the gate leaf may be modified to match similar gate patterns within the park, as long as the overall gate dimensions remain as per the city standard.

- Use of steel wheels and/or metal tracks embedded in pavement, etc. will NOT be acceptable as vehicle gate guides or supports.
- Vehicle gate(s) shall be the "cantilever type" design as shown in the city standard design drawing.
- The structural engineer shall verify the maximum span for the cantilever gate and shall size gate steel members accordingly, providing structural calculations for member sizes.

Locking. The City standard design requires that the vehicles gate(s) be able to be locked by CLV Marshals when the park is closed. Gates shall be provided with a heavy-duty chain welded to each leaf which can be padlocked together when the gate is in the closed position or secured to a steel bollard in the full open position. (See CLV standard design drawing for chain specifications).

- Steel "hinge-pin" type locking mechanisms at gates will NOT be acceptable.

Signage. The gate(s) shall be provided with a reflective sign on each gate leaf to prevent vehicles from damaging gates. (See CLV standard design for specifications of gate signage).

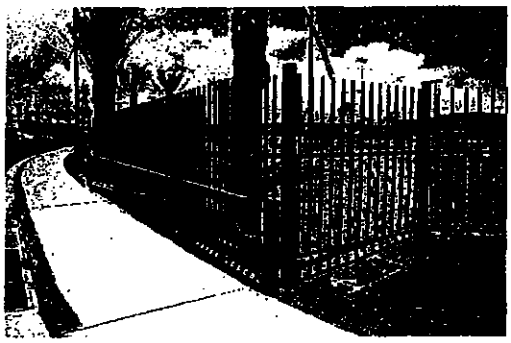
Location. Vehicle gate(s) at park entry sites are required to be located a minimum of 30' away from the back of curb of the adjacent street. This distance shall be measured from the back of curb to the "street side" face of the vehicle gate(s).

Bollards. One steel bollard shall be provided for each vehicle gate leaf to secure gate leaf in the fully open position. (See CLV standard design for specifications of bollard).

Engineering. The CLV consultant's structural engineer shall be responsible to determine all steel member sizing, footing sizing, etc. of the vehicle gate and shall support the sizing with structural calculations suitable to obtain a building permit.

NRS 405.270 & UL 325. All electrically operated vehicle gates must comply with NRS 405.270 which adopts UL Standard for Safety 325 by reference. Among the requirements are signage, gate swing direction and protection against injury specific to type of gate operation.
Fire Department Access. See section at top of page regarding general requirements for fire department access to Fences, Gates & Hardware.

Example photographs.
The pictures shown below are examples of vehicle gate leafs showing patterns both with and without a fence.



Trash Gates- Design Criteria.
Design Elements. See the City standard for general gate design and layout. The design pattern shown on the gate leaf may be modified to match similar gate patterns within the park, as long as the overall gate dimensions remain as per the city standard.

- Gates shall have 16 gauge, opaque, steel backing which shall completely screen off trash bins inside trash enclosure.
- Both gate leafs shall be provided with a minimum 8" clear hand-hole (shape of hand-hole can be modified by consultant as needed). The hand-hole shall meet all ADA requirements for gripping surface, height above finished floor, etc.
- The standard trash enclosures shall be able to hold two trash bins as shown in city standard design. However, some enclosures may require three trash bins. Verify number of bins per enclosure and the number of enclosures required in park sites with city staff when using city standard design.
- Bottom of trash gates shall be a minimum of 6" from top of adjacent ground surface in front of trash gate.
- Use of cane bolts is prohibited as a means to secure trash gates in either the open or closed position.
- The use of perforated or otherwise non-opaque material is prohibited as a screening material at trash gates. Screening material must conform to the requirements set forth above.
- The structural engineer shall verify the maximum span for the cantilever gate and shall size gate steel members accordingly, providing structural calculations to support the gate length.
- Gate jambs to be fabricated by a CLV approved fabricator.
- Gate hinges shall be field welded.

Locking. The City standard design requires that the trash gates be left unlocked, but trash gates shall be provided with a heavy-duty "latch and keep" assembly, located on the backside of the trash gate. It is the consultant's responsibility to choose the type of "latch and keep" assembly for the gate.
Signage. None required.
Republic Services. The current City standard design complies with standards set forth by and design has been signed off by Republic Services.
Gate Hinge Design. The City standard design requires that the hinge design as shown on the CLV

standard drawings must be adhered to. The structural engineer is responsible to size all tubing for the hinge, providing structural calculations to support his sizing. The engineer must adhere to all tube hinge clearances shown in the CLV standard design.
Engineering. The CLV consultant's structural engineer shall be responsible to determine all steel member sizing, footing sizing, size, number and locations of steel reinforcement in CMU walls etc. of the gate and shall support the sizing with structural calculations suitable to obtain a building permit.
Fire Department Access. See section at top of page regarding general requirements for fire department access to Fences, Gates & Hardware.

Restroom Gates- Design Criteria.
Design Elements. See the City standard section 01050 for general gate design and layout, and for the City standard drawings of restroom and concession gates. The design pattern shown on the gate leaf may be modified to match similar gate patterns within the park, as long as the overall gate dimensions, frame design and infill bars remain as per the city standard.

- Gates shall be provided with a minimum 4" clear hand-hole (shape of hand-hole can be modified by consultant as needed). The hand-hole shall meet all ADA requirements for gripping surface, height above finished floor, clear interior dimensions, etc.
- Gates shall be accessible to the fire department, (see section at top for fire department access requirements).

Locking. The City standard design requires that restroom gates be provided with a deadbolt welded to the gate frame (see city standard drawing for specific detailing of this locking mechanism.
Signage. Signage designating either "Men" or "Women" with universal sign of accessibility shall be located on the wall adjacent to the gate. Signage shall conform to all ADA requirements including size, mounting height, contrasting background, Braille, etc.
Accessibility. The City standard design requires that the restroom gate design fully comply with handicapped accessibility requirements, this shall include push and pull side clearance at restroom gates, slopes of landings outside gates on both sides of restroom gates, etc. Consultant is responsible to ensure the requirement for Fire Department access as stated at top of this section is met.

Fences - Design Criteria. Provide the following picket type steel tube fencing if directed by the Project Manager, otherwise chain link is the standard.

Chain Link Fence Design Elements. Provide a mow strip under all fences located within turf areas (see Section 03001 Concrete).

Picket Type Fence Design Elements. See the City standard drawings in Section 02825 for fence design and layout. The design pattern shown on the fence may be modified to match similar fence or gate patterns within the park, as long as the overall fence dimensions remain as per the city standard.

- Fence pickets and rails shall have a tube steel wall thickness of 0.095".
- Fence picket spacing shall adhere to the current edition of the building code.
- All fences shall be galvanized and painted as per CLV Standards.
- Fence heights shall be coordinated with CLV project manager prior to establishing the final height of the fence. Standard fence heights shall be a minimum of 6'-0", 8'-0" or as directed by owner.
- The use of finials at fences shall be prohibited as per the 1997 CLV Supplement to the Uniform Building Code, section 3504.3 in CLV Building Code Supplement.
- Picket type fences shall be located at least 6 feet from turf areas to limit irrigation overspray rusting.
- Minimum fence post cross-section size shall be 4" square. Minimum fence rail cross-section size shall be 11/2" square and minimum fence picket cross-section size shall be 1" square.

Engineering. The CLV consultant's structural engineer shall be responsible to determine all steel member sizing, footing sizing, size, number and locations of steel reinforcement in CMU walls, etc. of the fence and associated gates within fences and shall support the sizing with structural calculations suitable to obtain a building permit.

Fire Department Access. See section at top of page regarding general requirements for fire department access to Fences, Gates & Hardware.
Children's Play Areas. See drawing in section 02882 Tot Lot Play Equipment for fence requirement.

Pool Gate. See section 13152

02852 Bridges

Pedestrian Bridges. Provide at grade concrete walk surfaces through drainage areas where possible (depressed sidewalks per ADA requirements). Use bridges only where budget and City approved design dictate.

02870 Site Furnishings

Glue-Down. Furniture may need to be epoxy glued to the concrete sidewalk, depending on the expected vandalism rate, particularly trash receptacles around skateparks. Check with the City Project Manager.

Bench. Model #Q1-VIC-84B, smooth texture with standard gloss sealer, as manufactured by Quick Crete Products Corporation, meeting the accessibility guidelines in Division 1, or Model #TF5065, smooth texture with standard gloss sealer, as manufactured by Wausau Tile, meeting the accessibility guidelines in Division 1, or Model # BH01, smooth texture with standard gloss sealer, as manufactured by Architectural Precast, Incorporated, meeting the accessibility guidelines in Division 1. Benches shall have center divider to prevent sleeping. Place bench edge at least 18 inches back from sidewalks edge to deter skateboarders.

Picnic Table.
Model #100-S, smooth stained concrete, graffiti-resistant sealer finish as manufactured by Outdoor Creations, Inc., P.O. Box 50, Round Mountain, CA 96084, PH: 530/337-6774, FAX: 530/337-6675, or Model #PT9636-AG, smooth stained concrete, graffiti-resistant sealer finish as manufactured by Universal Precast, Inc., or Model #TB02, smooth stained concrete, graffiti-resistant sealer finish as manufactured by Architectural Precast, Inc., meeting the accessibility guidelines in Division 1 of the standards. (Accessibility Guidelines for Outdoor Developed Areas). Note that this requires a ***24 inch deep*** minimum access space under the table top for toe space before you encounter the table leg supports. Picnic tables shall have raised edge (equally spaced along seat) (anti grind bumps) to deter skateboarders.

Trash Receptacle. Model #QS-PS2532W-A21, T1-smooth stained concrete with standard gloss sealer, cast and painted City of Las Vegas text (script letters, 2 ½" high, one side only), steel lids including cable and bolts, Q-GL27 galvanized 30 gallon liner, with standard 2" dia. drain hole as manufactured by Quick Crete Products Corporation, or Model #TF1025, W24-W024 smooth stained concrete with standard gloss sealer, cast and painted City of Las Vegas text (script letters, 2 ½" high, one side only, TF1440 lids, trash bag retainer ring, as manufactured by Wausau Tile, or Model #TRS-2532, smooth stained concrete with standard gloss sealer, cast and painted City of Las Vegas text (script letters, 2-1/2" high, one side only, steel lids including cable and bolts, bag retainer ring as manufactured by Universal Precast, Inc. ,or Model #GB05, smooth stained concrete with standard gloss sealer, cast and painted City of Las Vegas text (script letters, 2-1/2" high, one side only, steel lids including cable and bolts, bag retainer ring as manufactured by Architectural Precast, Inc., meeting the accessibility guidelines in Division 1.

City of Las Vegas

Ash Urns. Compatible with trash receptacles.

Drinking Fountains. See Section 1541 Water Coolers & Drinking Fountains.

Basketball Standards. See Section 02882 Recreational Facilities & Playground Equipment

Dog Waste Bag Dispenser. Dogipot Junior Bag Dispenser (2 Roll), Article #1002-2 , 15.5"x9.4"x3.25", .08 aluminum, powder coated forest green, with locking front access panel, 400 bag capacity, as manufactured by Dogipot. Reference drawing in this section for mounting height and signage. The location of the unit must meet accessibility guidelines of Division 1. (Dogipot 1-800-364-7681) http://www.dogipot.com

Reference section "02882 Recreational Facilities & Playground Equipment – Dog Parks" for related

information.

Signage. Reference drawings in this section for the following signs (see section 10426 for additional mounting requirements):

- Dog walkers. One sign mounted on post above dog waste bag dispenser.

Bike Rack. Model #62x-CIG manufactured by Kay Park Recreation Corp., in ground powder coated, #621 is 1 loop, #623 is 3 loops, and #625 is 5 loops.

Family Barbecue Grill. Model #SB1635 by Kay Park Recreation Corp.; meet the accessibility guidelines in Division 1.

Group Barbecue Grill. Model #XB16 by Kay Park Recreation Corp.; meet the accessibility guidelines in Division 1.

02875 Site Shelters

General Park Shelters. Shelters may be standard (do not specify or suggest custom structures) pre-manufactured metal roof designs by:

Poligon Park Architecture, 4240 N. 136th Ave., Holland, MI 49424
(800) 354-7721, www.poligon.com
Classic Recreation Systems, Inc. (CRS), 812 Copper Basin Rd., Prescott, AZ 86303
(800) 697-2195, Fax: (928) 772-0858, www.classicrecreation.com
Skylark Shelter Systems, by Central Denver Ironworks, Inc. Denver, Colorado 80216
(303) 433-3180, Fax: 433-3002, www.skylarkshelters.com
ICON Shelter Systems, Inc., 7900 Logistics Dr., Suite C, Zeeland MI, 49464
(800) 748-0985, Fax: (616) 748-0995, www.iconshelters.com

or standard design fire-resistant fabric shelters by:

Sun Ports International, Inc., 8319 Chancellor Row, Dallas, TX 75247
(800) 966-5005, www.sunports.com
or pre-approved equal.

The following criteria will need to be met for pre-approval of manufacturer and installers of fabric shelters:

- Manufacturer and installer shall have a minimum of 5 years experience with fabric shelters.
- Installer shall have a Nevada Contractors License and a City of Las Vegas Business License.
- Fabricator shall be approved for structural steel by the Las Vegas Building and Safety Department.

Fabric is not acceptable for the larger reservable group picnic shelters as these need to provide protection against prolonged rain. Study the sun angles to fully utilize and minimize the fabric area. Varying colors and shapes is encouraged within a manufacturer's standards. Specify fire-resistant fabric with a flamespread index of 25 or less as measured by ASTM E84. Fabric design must slope a minimum of 45 degrees on all portions so that most objects thrown onto the fabric will immediately roll off. Fabric must be located out of reach of an adult standing on tables, tot-lot equipment, walls, rocks, fences, railings or other surfaces located under or near the fabric structure.

Group Picnic Areas. Group picnic shelters need to accommodate at least 25 people to be reserved. Larger programmed numbers such as accommodation for 50 people needs to be laid out to accommodate either a single group of 50 or two different groups of 25. Use an occupancy load of 6 people for a standard six foot long picnic table, 8 people for an eight foot table, etc. Group shelters need to have a solid roof capable of rain protection. Smaller shelters over single tables and non-reserved areas can be either solid or fabric.

Picnic Tables. Layout of the tables needs to carefully designed to avoid skateboard grinding on the benches. The tables will not normally be relocated per group requests. Additional portable tables may be provided by park maintenance crews to accommodate any special needs. The best layout does not allow a skateboarder any length of concrete leading up to and parallel to the bench, but rather any length of concrete leads perpendicular to the middle of the bench. Provide sufficient wheelchair accessible picnic table spaces to meet ADA requirements for each reserve-able group area. See Section 02870 Site Furnishings for the table standards. Since tables are not movable, the layout must provide for summer shade of all tables located in the shelters.

Electrical. No electrical receptacles.

Lighting: In addition to the standard night security lighting for the area, provide additional user controlled lighting under the group shelters utilizing the City standard user lighting controls. The user controls pushbutton, signage and warning light may be mounted on and within the structure. All conduit shall be

concealed. Shelters smaller than "Group" level do not receive any lighting above the standard night security lighting.

Water. Provide adjacent to the picnic area, a subsurface box containing a quick coupler hose connection. Connect to the domestic water source, not the irrigation system. Provide additional connections around the group picnic area such that all the tables can be reached with a 50-foot hose. This connection does not need to be ADA compliant for park users.

Barbeques. Provide one per reserved group area or one per 25 people, whichever produces the greater number of barbeques. See Section 0270 Site Furnishings for the model standard. Do not provide any permanent side or serving tables adjacent to the barbeques. Any temporary tables needed for the barbeques will be provided by parks maintenance crews.

Signage. (verify w/ CLV Project Manager that signage is to be used) Reference drawing in this section (see section 10426 for additional mounting requirements and heights):

> Group Shelter Sign. One sign for each group shelter to identify the area available for group reservations; Areas to be identified by letter starting with "A", "B", etc. Mount the sign in a location to be visible from the direction where most people will be approaching. Mount sign above the permit holder slot device.

DESIGN STANDARDS
Division 2 – Site Construction

02882 Recreational Facilities & Playground Equipment

Related Sections.
01041 Parking Facilities Design, required parking ratios for athletic fields.

In addition to nationally recognized standards for play and leagues, provide the following:

Berms. Within the limits allowed under Section 02900 Planting for turf area and slope, provide berming for spectator viewing at selected fields and activities.

Baseball Fields.

Layout. Prior to design, get a commitment from Leisure Services of the intended target user group. The consultant is to verify the specific league field requirements prior to laying out the field (see list at end of section for league names and baseball standard websites) and provide a layout per those league standards. Leisure Services and OAS will have the final say on the design. Do not locate skatepark's, tot lots or other activities in foul ball or home run area. Quad field layout with the backstops surrounding a restroom/concession building is the preferred layout.

Fencing:

- Backstops shall be a minimum of 28 feet high. Provide closely spaced horizontal rails from grade to 24" high minimum along the base of the woven wire home plate backstop area to prevent cupping of the fabric. Do not specify a board base.
- Specify PVC coated fencing only if requested by the city, otherwise hot-dipped galvanized.
- Use bottom rail, not tension wire, at all fences and backstops at fields.
- Chain link fabric used in the backstops, wings and infield areas shall be 6 gage (See drawings in this section for more information).
- Outfield fence shall be 9 gage fabric.
- Outfield fence to be 8' high with 6' high side returns to the bullben.
- Horizontal bars are required at 4 foot maximum vertical spacing and the bottom 4 feet of fence fabric shall be a separate roll of fencing to accommodate its frequent replacement without the need to replace larger quantities of fencing.
- Engineer the chain link infield fence and backstop from first base to third base to accommodate the wind loads from windscreens and sunscreen tarps attached to the chain link. These screens are likely to be attached by the leagues depending on the field layout and time of day they are playing, and could be almost any material and area.
- Where fence post sizes vary to accommodate the loading requirements of shade or protective materials, or height variations, poles shall be offset to maintain a straight fence line on the field side. Fabric shall be attached in a manner that provides a straight fence line, without bump-outs at posts. Large post sizes will reduce spectator visibility – do not oversize beyond engineering requirements.
- Wire fence ties shall be steel, not aluminum. Aluminum is easier for the contractor to install, but tends to loosen in time.
- CLV standards supersede ANSI standards where noted.

Home Run Warning Cap:

Provide home run warning cap for player's safety. Cap shall run continuous between foul poles. Cap shall be poly (plastic), UV resistant, yellow in color. Available from Grant Enterprises (800) 338-5370, Douglas Industries (800) 553-8907 or equal.

Grading. Split outfield down the center and grade 1% to foul lines where site topography allows. For skinned infields, grade 1% from pitchers mound in all directions towards bases. It is preferable that the baselines be level. If the diamond must pitch, the average slope shall be 2% from first base to third base or vice versa.

Turf. Infield and outfield turf to be Bermuda Hybrid Tiff Sport or synthetic turf as directed.

Infield mix to be 2mm minus decomposed granite reddish color, stabilized.

Irrigation. See Section 02810 Irrigation Systems for special requirements.

Shade. Explore partial sunscreen protection in the spectator areas of baseball parks. Dugout shading is provided by leagues using windscreen or tarp attached to the chainlink dugout roof and walls.

Bleachers. Verify the size of bleachers to be used with leisure services and the specific league using the field. Ensure handicap spaces are located next to the bleachers per current ADA requirements. Bleacher manufacturer's to be Aluminum Seating Inc, L. A. Steelcraft, Kay Park Recreation, or equal.

Power & Communications.

Provide electrical receptacle behind each backstop for team equipment.

Provide electrical receptacle in each dugout for pitching machines.

Provide remote switch or disconnect for receptacles, for use by city personnel.

Provide empty power conduit to future scoreboard location (right field or left field). Assume wireless scoreboard controls.

Lighting. Avoid pathway lighting beyond the outfield; is a batter distraction.

Scoreboards: Provide for one future scoreboard per baseball field. See section on "Power & Communications" above for power requirements, controls, layout etc.

Netting. Where it is required to protect adjacent properties, streets and spectators watching other adjacent games from foul or home run balls, provide high protective netting of 1-3/4 inch square mesh, black UV treated knotted nylon with rope perimeter and steel rings at connection points: Sterling Net and Twine Co.; Douglas Quality Sports Nets and Equipment; Gourock Batting Cages; or equal. When installing over pedestrian areas between fields, shape into a steeply pitched design so that foul balls will roll onto the fields.

Foul Poles. Provide foul poles: L.A. Steelcraft Products, Inc., #FLP-20; Turf Sporting Goods #BSB1999; or specify all metal equal (20 feet high).

Bases. Provide home plates and pitching rubbers: Bolco #300-AS, Bolco #470-C2 or equal. Bases (break away type): Rogers #RBBS-T or equal. http://www.rogersusainc.com

Signage. Reference drawings in this section for the following signs (see section 10426 for additional mounting requirements and heights):

- Fly Ball. Locate in areas where pedestrian and parking areas are at risk to homeruns or foul balls.
- Field ID. Mount one sign on the outside of the backstop fence at 10' to the top of the sign.
- Field Rules (Baseball only). Mount one sign at each entrance on the fence next to the gates into the baseball field.

Baseball Dugouts. See CLV standard drawings for standard plan and layout of dugouts:

- Accessibility. Baseball dugouts shall be handicapped accessible. Please review the CLV standard plan and layout of dugouts and the most current edition of the "United States Access Board – Accessible Sports Facilities" for requirements. See the following link to the website. http://www.access-board.gov/. Baseball fields and dugouts shall also comply with ADA/ANSI Title II, which deals with government owned facilities (Parks, Ballfields, etc.)

- Number of handicapped Spaces in dugouts. There shall be at least one handicapped wheelchair space and one companion bench space provided at all dugouts. For dugouts providing bench seating for 1-26 players, provide (1) handicapped wheelchair space. For dugouts providing bench seating for 26-50 players, provide (2) handicapped wheelchair spaces.

Softball Standards. The city prefers 65' base paths for 300' fields, 60' base paths for smaller fields.

Baseball Standards Website:
http://www.ncaa.org/library/rules/2003/baseball_rules.pdf
http://www.usssabaseball.org/Forms/2003-04 Baseball Rules.pdf
http://users.aol.com/rllinfo/rules.htm
http://mlb.mlb.com/NASApp/mlb/mlb/official_info/official_rules/game_preliminaries_3.jsp
http://www.nfhs.org/rules-softball.htm
http://softballsearch.eteamz.com/softballrules.html
http://www.cactusumpires.com/pdf/04-ncaa-major-change.pdf

Basketball Courts. Provide a concrete post-tension slab, court striping only; no court surface coating. Reference Section 03001 Concrete.

Provide Wausau Tile precast concrete basketball standard complete with poly-form backboard and net Model #TF7186, with BA33U Double-Rim Heavy Duty Flex Goal. Concrete stain color to coordinate with park scheme. Separate the basketball standard and any other slab penetrations from the slab with 2 inches of medium density foam and elastomeric joint sealant. See the tennis court details in this Section for additional information about this separation.

Provide chain-link fencing as needed to contain the ball from adjacent traffic areas and conflicting activities.

Signage. Sign for basketball court only required if the court has an athletic top-coat surface, in which case reference drawing in this section for the following sign (see section 10426 for additional mounting requirements and heights):
No wheeled Toys. One sign mounted on gate/fence or post at main pedestrian entrance into basketball courts a maximum of 10' high to the top of the sign.

Football Fields. Preferred orientation is north-south. Provide empty electrical conduit to future scoreboard location. Assume wireless scoreboard control.

Signage. Reference drawing in this section for the following sign (see section 10426 for additional mounting requirements and heights):
Field ID. Mount one sign for each field on a post or light pole visible from the parking lot a maximum of 10' high to the top of the sign.
Field Rules (Excluding Baseball). Mount one sign on a post at each main pedestrian entrance to a field(s)

Soccer Fields. Size: 225' x 360'. Preferred orientation is north-south. Provide empty conduit to future scoreboard location. Assume wireless scoreboard control.

Where field layout forces a goal to be backed up to a property line, provide netting behind the goal to catch balls, 26' high x 120' wide, centered on the goal. This may also apply to protection of picnic or other activities located behind goals. The preferred option is a site design that avoids situations that may require the netting.

Signage. Reference drawing in this section for the following sign (see section 10426 for additional mounting requirements and heights):
Field ID. Mount one sign for each field on a post or light pole visible from the parking lot a maximum of 10' high to the top of the sign.

Field Rules (Excluding Baseball). Mount one sign on a post at each main pedestrian entrance to a field(s)

LaCrosse Fields, may be double stripped over soccer or football fields. Men's field is 180' x 330'. Note that LaCrosse requires more player parking than soccer, see Section 01041. Link to fax reference information..

Tennis Courts. Reference standard drawings in this Section for additional information. All design and construction must meet the requirements of the American Sports Builders Association (formerly the U.S. Tennis Court and Track Builders Association), United States Tennis Association (USTA), Post Tensioning Institute (PTI), American Concrete Institute (ACI), and industry standards.

Slab. Provide a concrete post-tension slab. Specify concrete, design and construction methods to produce the least cracking. Reference Section 03001 Concrete for additional requirements.

Courts and Court Layout. Provide courts with a clear play area of 60 feet by 120 feet each. Do not locate any obstructions within the play area including light poles, shade cabanas, or fence posts. Where courts are located in pairs or multi-court banks, and light poles, fence posts, or shade shelters are located between courts, provide additional width between courts so that these obstructions are not located within the 60 foot clear play area width. Whenever possible, locate light poles and other obstructions outside of the court fence.

Locate courts away from other activities to avoid play distractions. Do not locate so buildings or trees cast shadows on the courts.

Orient the long dimension of the court north-south or at 22 degrees south-east and north-west. If using the 22-degree orientation, verify that all tournaments to be played at the facility allow this orientation. The 22-degree orientation has been approved by the USTA. Reference the USTA, American Sports Builders Association, or click here for more information. (Las Vegas is roughly 36 Degrees N. Latitude).

Avoid continuous multi-court banks of more than 4 courts per slab.

Cut-corner court design may be utilized for park recreational play. If courts are scheduled to be programmed or used for tournament play, provide the full 60x120 clear rectangular play area. USTA sanctioned tournament play prefers full rectangular courts.

Court Surface. Provide a standard acrylic hard tennis court surface (not cushioned), by manufacturer approved installer, consisting of (these courses may be varied to meet the manufacturer's recommendations except the minimum total number of coats must be maintained; no asphalt emulsions):

- Etching, cleaning and patching
- Concrete primer
- 2 Resurfacer/filler coats with sand
- 2 Color coats, with sand as needed to meet specified speed
- 1 Finish color coat, with sand as needed to meet specified speed
- Striping

Manufacturers:

California Products Corporation, DecoColor Acrylic System, www.decoturf.com

California Products Corporation, Plexipave System, www.plexipave.com

Nova Sports USA, Inc., Novacrylic Combination System 2, www.novasports.com/

Advanced Polymer Technology, Laykold Colorcoat Concentrate System, http://www.advpolytech.com/

or pre-approved equal.

Specify a warranty period of two years from substantial completion for the tennis court surface materials and installation. Warranty to cover delamination, peeling, cracking, excessive fading or wear, and other visual defects, excepting defects caused in whole or part by abusing the surface, and by cracking or spalling of the concrete substrate. The installer accepts responsibility for other concrete surface defects by applying the surface.

Nets and Accessories. Provide complete with all nets, posts, tie downs and hardware, by L.A. Steelcraft Products, Inc., Edwards Sports Products, or pre-approved equal. Specify 3-1/2" net posts Model NG-400 with NG-500 internal tamper proof tightener (Steelcraft), net post sleeves with locking cap (Steelcraft E Series), net with fiberglass side pockets (Steelcraft TN-36), and center tie down strap and anchor.

Fencing. Provide 10-foot high chainlink fencing across the back of the court and along each sideline from the corner 30 feet up each sideline. The middle 60 feet may be left open, provided with a dropped or tapered-drop 3-foot high fence, or a full height fence, depending on the site parameters. Design using ASTM F969 as a minimum standard. (City standards overrule ANSI standards.) Engineer and show all sizes, materials and dimensions on the plans. Do not assume the bidders or contractors have a copy of the ASTM Standards. Specify hot-dipped galvanized fencing; vinyl coated only if requested by the city.

Mesh. Specify 6-gauge wire with a 2" diamond pattern and windscreens. Locate on the court side of posts.

Rails. Provide top and bottom rails, NO intermediate rails. Space poles closer together to account for loss of intermediate rail.

Gates. Where the perimeter side middle is not left open to provide access, provide 4-foot wide pedestrian ASTM F900 gates with ADA legal hardware. Two pedestrian gates located at opposite back corners of the court is preferred to one gate at mid-court. See Section 02825 Gate Handle Detail for the ADA hardware. For fully fenced courts, provide a 10-foot wide dual leaf, double swing, padlockable maintenance gate.

Dividers. In multiple court layouts, side divider fencing between courts should be provided if courts will be programmed or otherwise heavily utilized.

Windscreen. Manufactured by NJP Sports (1-818-247-3914 or 1-800-773-4657), or Tenn-Air (800-766-3631) or approved equal. The windscreen shall be fire retardant open mesh black seamless polypropylene and fabricated in 9 foot height with optional #1250 reinforced wind tape and #1251 reinforced wind tab height. All hems are to be bound with 2-3/4" binding tape with #1 brass grommets every 12".

Physical Properties:
Weight: 4.6 oz/sq yd
Shade: 80-85%
Tensile Strength: Warp 325lbs, Fill 200lbs
Trapezoid Tear: Warp 150lbs, Fill 90
Thickness: 13mils
Yarn Type: 930 Denier UV/FR

Locate on the court-side of the posts of all 10-foot high perimeter court fencing.

Amenities. If the budget allows, provide a shade structure between courts or nearby for spectators. If locating between courts, utilize a two-pole manufactured shade unit, located outside of the 60x120 play area. Note that any spectator seating provided needs to be at least 15 feet outside of side lines and 24 feet behind baselines.

Provide a drinking fountain in proximity to the courts.

Provide trash receptacles in proximity to the court entries.

Provide a below grade quick coupler(s) in the vicinity of court(s) for hosing down the court surface.

If courts are to be programmed, provide electrical receptacles in light poles or behind the baseline fence for training equipment.

Lighting. Courts are normally lighted with user controls per Section 16520 Exterior Lighting. Verify if lighting is going to be an issue with neighbors.

Note that if the courts are surrounded by full height fencing, the design will need to incorporate the need for court players to view the user warning light and access the push button lighting control timer, without it being located within the play area (60x120). If a multiple court layout requires that light poles be located between courts, one option is to locate the warning light and push button on a light pole, outside of the 60-foot minimum clear play area. For courts with an open middle perimeter side fence, the standard warning light pole and push button may be located adjacent to the slab at mid-court.

Signage. Reference drawings in this section for the following signs (see Section 10426 for additional mounting requirements and heights):

- No wheeled Toys. One sign to be located on fence next to gate into tennis courts.
- Rules. One sign to be located on fence next to gate into tennis courts.
- Class Times. If courts are to be programmed, one sign to be located on fence next to gate into tennis courts.
- Court Number. If more than two courts are provided, provide court number signage similar to field ID signage shown in this section.
- Push Button Sign. One sign to be located in conjunction with Light Control Push Button. Reference Section 16520 (Exterior Lighting) for requirements.

Volley Ball Courts. Nets need to be of a pulley tightening design.

Horseshoe Pits. Reference drawing in this section for correct dimensions and construction.

Bocce Ball Courts. Three variants of the sport and many "standards" exist for bocce, not to mention the half dozen or so federations, associations and organizations that wish to impose their beliefs on the bocce playing public (they can't even agree on the spelling and wars have started over the disagreements) http://www.borg.com/~iba/links.html. However, by utilizing the largest court size found within the standards, where space and budget permit, all forms of bocce can be accommodated. The largest of the standards for court size is 90 feet x 13 feet and will accommodate International Tournament Play. Length is more critical than width, with the minimum recommended width being 9.85 feet. In no case should the length be less than 76 feet.

Bocce courts shall have a 2 inch layer of 3mm minus decomposed granite baseball infield mix with stabilizer at a rate of 5 pounds per ton over a very hard, but drainable sub-base, such as type II compacted to 95%, and leveled dead flat.

Courts shall be formed by nominal 2 inch minimum thickness boards extending 6" above the finished play surface and backed by a concrete curb, 5 inches thick, minimum. All fasteners for the boards shall be counter sunk and shall be installed in a manner that allows replacement of boards. Boards shall be fastened to the curb at intervals not to exceed 6 feet, with fasteners placed no further than 6 inches from the ends of boards. Boards shall be of weather and decay resistant material such as treated wood, or preferably, a manufactured planking product such as Trex contact AC Houston Lumber Co., 2912 East Madre Way, NLV, NV 89033, phone 633-5000 or fax 633-5005. Contact Darlene Altman.

Provide a quick coupler near the bocce area for use in grooming the courts.

Due to the damage that can occur to bocce courts by other activities, placement of the bocce area should be such that it is isolated from park thoroughfares and provided with the standard signage stating the area is designated for bocce play only.

Accessibility to the bocce court(s) is required per the ADA/ABA Guidelines. Courts may be paired with a walking surface along one side of each court and at both ends. Seating is desirable at the ends and at the sides of bocce courts to accommodate the highly social nature of this sport.

Signage. Reference drawing in this section for the following sign (see section 10426 for additional mounting requirements and heights):

Bocce Sign. Mount one sign on a post visible from the main pedestrian entrance.

Roller Hockey. Design using the USA Hockey Guidelines with a 165' x 65' rink size.
http://www.usahockey.com/inline/main/rules/inline_rules_sect323//

Design for "in-line" hockey skates (3 or 4 wheels in a row), not traditional "roller" hockey box skates (4 wheels, 2 side by side).

Provide a "no curb or step" ADA compliant rink and bench entry that does not impair play when the gate is closed.

Specify PVC coated fencing only if requested by the city, otherwise hot-dipped galvanized.

Signage. Reference drawing in this section for the following sign (see section 10426 for additional mounting requirements and heights);

Roller Hockey Sign. One sign to be located on fence next to gate into Roller Hockey Area.

REFERENCES:

Some of the competing organizations for standards:
NARCH (North American Roller Hockey), USARS – AAU (USA Roller Sports, the Amateur Athletic Union uses the USARS rules), USAHIL (USA Hockey InLine), RHI (Roller Hockey International), IIHF (International Ice Hockey Federation, In-Line Hockey).

Sizes of existing City rinks:

Aloha Shores	155 x 75
Mountain Ridge	167 x 77
Police Memorial	130 x 75
NW Family Park	175 x 75

Link to City email on rink dimensions and standards to use.

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-----Original Message-----
From: Patricia Ayala [mailto:PAA@gty.ci.henderson.nv.us]
Sent: Thursday, July 19, 2001 6:52 AM
To: Jdix@ci.las-vegas.nv.us
Subject: Re: FW: In-Line Hockey Standards

We don't have any constructed hockey rinks.  One is in pre-construction, to
start in the next few weeks in a park in Anthem.  It is 185 x 85 and follows the
USA Hockey guidelines.  It's on the high end of the NARCH Official
recommendations 70-90' by 160-210'.

As it's not constructed we are not receiving feedback.  We did however received
a lot of input, and this seemed to fit the majority of the players needs, and
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was confirmed by the consultants who deal both with the hockey as well as skate parks in the western state areas.

Hope this helps.

Patricia Ayala
Park Planner

City of Henderson, NV
(702) 565-2344
Fax (702) 564-9366

paa@gty.ci.henderson.nv.us

Frisbee Disc Golf. Freedom Park contains the city's only public Disc Golf Course. The County has courses at Sunset and Mountain Crest Parks. Sunset Park is the most popular course for Disc Golf events. You can find local maps of Disc Golf courses at the lvdiscgolf.com site.

Standards available at:
www.pdga.com
www.discgolf.com
www.discgolfassoc.com
www.disclife.com
www.lvdiscgolf.com

Flag Football. Click here for a link to emailed information.

Leisure Services League Contact List:

MABL/MSBL
Mr. Edi Gomez
4521 Nolan Lane
Las Vegas, Nevada 89107
878-0785

District 4 Little League
Mr. Mike Aker
172 Marion Avenue
Las Vegas, Nevada 89110
452-1961

Western Little League
Robin Lundin
2251 N. Rampart Box 254
Las Vegas, Nevada 89128
274-5065

Peccole Little League
Glen Stevens
PO Box 371352
Las Vegas, Nevada 89137
227-3394

Pop Warner Football
Mr. John Lybbert
2765 So. Highland
Las Vegas, Nevada 89109
873-4096

SNABA
Mr. Larry Bergren
1640 Splinter Rock
N.Las Vegas, Nevada 89031
454-7863

Central Little League
Mr. Val Buhecker
3601 Duffy Circle
North Las Vegas, Nevada 89031
647-4388

Lone Mountain Little League
Ms. Rosalyn Blaylock
6428 Quantum Ln
Las Vegas, Nevada 891130
656-1300

Mt Ridge Little League
Ms. Teri Berg
6180 Misty Brook Ct.
Las Vegas, Nevada 89149
658-8502

Community Baseball
Mr. Ricky Towers
4342 East Boston Ave
Las Vegas, Nevada 89104
390-8867

Nevada Youth Football
Mr. Ray Henriksen
6532 Deersprings Way
Las Vegas, Nevada 89131
360-0790

USYSN
Jere Towery
3426 Brittlewood Ave.
Las Vegas, Nevada 89120
371-9620

NVASA
Ms. Sally Commerford
8027 Rodeo Road
Las Vegas, Nevada 89123
361-7431

Nevada Baseball
Mr. Jaime Rios
2540 S. Maryland Pkwy #123
Las Vegas, Nevada 891
496-2141

Red Rock Little League
Valerie Walton
512 Heart line Dr
Las Vegas, Nevada 89145
255-7237

District 2 Little League
Mr. Bob Fleming
2630 Brockington Dr.
Las Vegas, Nevada 89120
435-9155

Las Vegas Lacrosse
Mr. David Kline
6312 W. Cheyenne #B
Las Vegas, Nevada 89108
229-0336

Nevada Baseball
Jaime Rios
2540 S. Maryland Pkwy
Las Vegas, Nevada 89109
354-1923

DESIGN STANDARDS
Division 2 – Site Construction

02882 Recreational Facilities & Playground Equipment – Dog Parks

Layout.

Acreage. Neighborhood Dog Parks should be from 1 to 3 acres. Citywide Dog Run/Parks should be at least 10 acres. (25 Dogs per acre maximum for proper dog behavior and turf survival.)

Shape. Any shape, although a linear shape has more potential for variety.

Areas. Two separately fenced areas: one for small dogs (dogs under 25 pounds, puppies, old and handicapped dogs) and one for large dogs. The large dog area should be around 2/3 of the total fenced acreage since they require more area to run and reportedly are more often taken to such facilities than smaller dogs.

Fence. 6 Feet high chain-link, prefer rounded corners. Bottom rail design with a narrow gap above a concrete mow strip (see Section 03001 Concrete). Vinyl coated fencing may be considered on a case-by-case basis (15% price increase).

Entrance Gates. Airlock double gate design, self-closing, and latches. Provide ADA accessible hardware (reference 02825 Fences, Gates & Hardware section) and clearances at the gates and minimum distance between the gates. Entrances to the two areas should be near each other so additional orientation and directional signage is not required. Also, larger gate areas should be provided elsewhere to allow maintenance equipment inside.

Emergency Exit(s). More than one entry point to each area. The number of exits and arrangement of exits should be similar to the building code requirement for emergency exiting.

Concrete Entrance Pads. Provide a 20-foot radius of concrete sidewalk inside each main entrance, so that the adjacent turf can survive the heavy traffic.

Walking Paths. Extend concrete sidewalks into sufficient areas to meet the ADA Title II requirement to provide an equal experience and opportunities for dog handlers in wheelchairs. 5 Feet minimum wide sidewalks.

Parking. Near the main entrances to the fenced areas.

Landscaping. Generally turf and trees, but for variety some areas should be rock covered with a rock size large enough so the dogs won't be kicking them around. Landscaping may also be used outside the fence to soften the visual impact of the fencing. Plant selection should concentrate on toughness with a variety of scents. Turf and other areas must slope a minimum of 1% to drain. Standing water is such a facility quickly becomes a disaster area.

Separations. The Dog Run area, from the parking to the fenced entrances to the restrooms, should be separated from any play equipment or other child play areas. Dogs will get loose on occasion and should not be attracted to adjacent running children. Also, the area around the dog run should not have activities that create much motion that will excite and distract the dogs or increase their barking (no jogging paths, sporting facilities, even adjacent walking paths can create barking activity).

Amenities.

Bulletin Board. For public posting of lost pets, available adoptions, vaccination clinics, etc. ADA accessible height, located under the shade structure(s).

Marking Post. Provide a wooden post inside the main entrance in each area, with sand around it. The concrete walk surface must be close enough to be considered ADA accessible (assume a 6 foot leash

fencing should be located anywhere: 1) a public pedestrian path in the area of the skatepark is within 25 feet of the skate area, excluding pathways whose sole purpose is to provide access to the skate area or adjacent spectator area, 2) a spectator seating area is located within 25 feet of the skate area including adjacent turf likely to attract spectators and any vehicle parking, 3) elsewhere as directed by the City.

The fence must be able to stop a skateboard up to a height of 6 feet. In general, any such fence should be located at the skate area perimeter, rather than at the protected public walking surface or spectator area that would leave adjacent landscaping areas exposed to skateboarders. The area inside of the fence must be concrete or other hard surface. Designer may propose any fence material and design; galvanized chain link may be acceptable depending on location. The fence post bases need to be detailed to prevent premature rusting from landscape or other nuisance water.

Entrances. Provide at least 2 entry/exit points from the skate area to the park if the skate area perimeter is fenced or otherwise not escapable due to grade changes or thick vegetation, similar to the code requirement for two exits from a building area as to location and distance apart.

Parking. Vehicle parking and circulation should be located at least 50 feet from the skate park area.

Signage. Reference drawings in this section for the following signs (see section 10426 for additional mounting requirements and heights)::

- Rules. City standard caution sign at each entry into the skatepark area. One sign at each entry point unless the entry is over 10 feet wide, in which case multiple signs are needed. Install an 1/8" thick Lexan panel over the sign face if the sign is located in an area that skaters are likely to congregate; panel to be bolted to the sign so City maintenance crews can replace damaged panels.
- Extreme Sports. One sign located at the main entry to the skate park.

Concrete Detectable Warning Surface. Provide at each entrance into the skate area a two-foot deep section of detectable warning surface per the City standard drawings. "Tac-tile", 12 inches x 12 inches x 2 inches thick, as manufactured by the following or *approved* equal:

Interlock San Diego
4351 Stanford Street
Carlsbad, CA 92008
TEL (760) 434-5586
FAX (760) 434-3840
E-mail: dahlpete@aol.com
http://detectablewarning.tierranet.com/products.htm

- Integral tile color to be selected to coordinate with the park color scheme and meet the contrast requirements of the ADA (or safety yellow if approved by the City).
- Grout must be identical color to tactiles.
- Setting Bed Mortar: 1:3 Portland cement/sand gauged with Laticrete No. 3701 Admix.
- Grout: Laticrete Dry Bond Grout and Joint Filler gauged with Laticrete No. 3701 Grout and Mortar Admix.
- Concrete Mix Design: 5000PSI
- Sealant produced by Interlock S.D. or approved equal is required on all tiles and grout (0.6 coefficient of friction).

Use no tiles less than one-half full size tile, and center tile pattern on entrances (see City standard drawings).

Seating. Provide for seating in the skate area and outside the skate area for spectators. These two seating areas do not need to be adjacent. An elevated location for both seating areas is preferred to make the most of any sight lines.

The spectator seating may be bleachers or any seating arrangement and materials allowed by other sections of these guidelines and the ADA. The skater seating material, as well as any other materials inside the skate area, must be poured or pre-cast concrete or similar durability (no CMU or all metal).

Shade. Provide fabric shade for seating areas mounted at a height that cannot normally be reached by skaters. Study the sun angles to fully utilize and minimize the fabric area. Varying colors and shapes is encouraged within a manufacturer's standards.

Perimeter Platforms. Platforms (level landing deck areas) located at the skate area perimeter of concrete bowls should be 8 to 10 feet wide to keep skaters out of any adjacent areas. In general, slope the perimeter toward, and through, the perimeter curbs so any potential irrigation over-spray and heavy rainfall site drainage, do not drain into and through the skatepark.

Irrigation. No spray heads within potential over-spray distance of the skate area, 15-foot minimum from skate area curb.

Drinking Fountain. Provide a drinking fountain (City standard free-standing design) in the skate area or within 30 feet of a skatepark entrance.

Lights. If a skate area is programmed for lighting (beyond the normal minimal area lighting for adjacent walkways), provide a user-controlled timer with a warning light per the City's standard design, 30 foot candles, layout to minimize skater shadows.

Shop Drawings. Require the contractor to submit shop drawings in complete detail to demonstrate fabrication, finishing and installation of the work.

Concrete Bowl Type Construction.

General. Type V concrete with a light sandblast finish acceptable to the City's "in-house" skatepark representative, 4 Inch minimum thickness. Transition curves shall be part of a continuous pour. Contractor shall obtain City Representative's approval of joint/pour layout before pouring concrete. The location of all pour stoppages shall be approved by the City Representative. Permission to patch any defective areas shall not be a waiver of the City's right to require complete removal of defective work. No advertising impression, stamp, or mark of any description will be permitted on the surface of the concrete.

All surfaces to present a uniform appearance throughout.

Bowl Designs. Contractor shall be required to utilize full size templates during shotcrete finishing to verify the final formed accuracy of concrete curves and transitions. Consultant is required to include a specialized concrete specification section in the contract documents for construction of the skatepark (separated from the normal flatwork concrete section), which includes the requirement that the contractor contact the consultant at the specified points during the construction so his skatepark consultant may inspect and approve the work before proceeding with construction (see the Skatepark Specialist requirement above for the required construction administration inspections).

In addition, the contractor shall also notify the City Representative a minimum of two working days prior to each pour so the Representative can inspect, review and comment on the formwork, footings, subgrade, reinforcement, and drag forms. Any work covered prior to inspection shall be opened to view by the contractor at his expense, regardless of whether the quality of the work is determined as meeting the specifications.

Surfaces shall be of such smoothness and evenness that they contact the entire length of a 10 foot long straight edge or template (drag form) cut to design radius or form, laid in any direction, with an allowable tolerance of 1/8 inch, at no additional cost to the City. Forms for curved surfaces shall be so constructed and placed that the finished surface will not deviate from the arc of the curve, flat spots shall not be permitted. All surfaces shall be smooth, free of dips, pools or other minor obstructions for a continuous fall

to drain.

Protection and Curing. After the concrete has significantly hardened to allow foot traffic, spread a minimum of 2" of plaster sand evenly over all concrete flat surfaces. Contractor may increase the amount of sand in the bowls after curing to prevent skaters from using the facility prior to completion. Once the project is complete and ready to open (minimum 28 curing days), remove sand from site. Craze surface cracking shall be assumed to be evidence of improper curing. Improperly cured concrete shall be completely replaced at no additional cost to the City.

Sealer. In conformance with the manufacturer's recommendations, apply a UV rated, clear, penetrating sealer to all concrete surfaces. Specified sealer shall not degrade the grip of the skating surface. (Apparently acceptable but untested: Hunt "MD-7C", Sonneborn "Kure-n-seal", or Upco "Polyclear".)

Coping and Metal Edging. All metal coping and metal edging shall be hot dipped galvanized steel, galvanizing after fabrication, weld all connections, field fill out flush, grind and dress welded connections/joints/splices and field touch-up the galvanizing surface. Use nominal 2" diameter pipe coping. Provide weld-on anchors or lugs for embedded items.

Guardrails and handrails in the skate area are to be galvanized steel and may be painted unless the primary purpose of the rail is for grinding, in which case it is not to be painted. Grinding resin board, such as Durawood, is not to be used for grinding surfaces. The BMX bikes tear it up fast. Remove all traces of cement from metal coping and edging before it hardens.

Drains. Minimize the need for and quantity of internal drains in the basic design of the bowls, and locate them out of main traffic paths. Specify flush bronze or brass grate designs capable of being skated over.

Joints and Joint Sealers. Saw cut control joints throughout the park, including vertical transitions, in a regular pattern approved by the City Representative during the design phase and include a detailed jointing plan in the construction bid documents. Spacing of the joints in feet should be 2 to 3 times the slab thickness in inches maximum, generally 10 to 12 feet apart or 150 square feet of area.

Fill expansion joints, control joints and cold joints with a matching color material as appropriate to the type of joint. Expansion joints should be avoided in skate traffic areas. Control joints shall be saw cut and appropriately filled to prevent edge chipping and cracking. All joints in the skate park must be "skate-able".

Specify the following product for filling the saw cut control joints (substitute products will be considered but may by denied approval for any reason at the sole discretion of the City):

> "Sikadur 51 NS/SL, Flexible epoxy control-joint sealer/adhesive", by Sika Corporation, 201 Polito Avenue, Lyndhurst, NJ 07071, 800-933-7452, http://www.sikausa.com/.

Specify the following product for filling wider cracks and other flaws:

> "ARDEX Poly-Top, ARDEX Engineered Cements, Inc., 1155 Stoops Ferry Road, Coraopolis, PA 15108, www.ardex.com.

Alternate patching materials must be pre-approved before use and then installed at the sole risk of the contractor.

One applicator of these sealant materials is: Chris Muschaweck, Streamline Sealants, 2107 Hawaiian Breeze Ave., N. Las Vegas, NV 89031, Phone 702-592-8408, NV License 52183.

Concrete Contractors. The skatepark construction must be performed by a skatepark contractor who has been pre-qualified by the City, and the general contractor must list the skatepark contractor's name on his bid documents. (The general contractor and skatepark contractor may be the same company if the general contractor is using his own forces for the skatepark construction.) Specify in the bid documents

the following short list of pre-qualified local contractors:

Concrete Systems, 4470 E Cheyenne Ave, Las Vegas, NV 89115 702-643-5618
CG&B Enterprises Inc., 221 Sunpac Ave, Henderson, NV 702-565-6564

Additional contractors who want to be added to the qualified list must provide adequate evidence that they have successfully completed the construction of one (1) similar skatepark project, a minimum of 10 days prior to bid opening. The City shall be the sole judge of whether the previous experience is similar and was successfully completed. The contractor must be experienced and pre-qualified in both "poured-in-place concrete" and "shotcrete applications".

Manufactured Metal Ramps on Flat Post-Tension Slab.

Manufactured Ramps: The City has developed a generic performance specification based on an all steel frame ramp design with Skatelite Pro surface. Do not allow substitutions from this specification.

Link to a sample specification.

GameTime
P.O. Box 680121
Fort Payne, AL 35968-0121
Toll Free: 800-235-2440 fax: 256-845-9361
www.gametime.com
e-mail for Skate Park components representative (Doris Dellinger) DorisD@gametime.com

GameTime is the parent company of
Spohn Ranch, Inc. 15131 Clark Ave., Unit B
Industry, CA 91745
Phone: 626.330.5803 Fax: 626.330.5503
Local distributor for our area:
Rich Boyce Recreation, Inc.
PO Box 97
Wellsville, UT 84339
Toll Free: 800-453-2735
Fax: 435-245-5057
e-mail: boycerec@gametime.com

Other manufacturers with the minimum experience qualifications contained in the generic specification can also bid, but none have decided to do so to date.

Another possible supplier:

Huna Designs, Ltd
1000 Buffalo Road
Lewisburg, PA 71837-7407
Toll Free: 800-430-7407 Fax: 570-522-3030
www.hunadesigns.com

The exclusive manufacturer and distributor of Woodward Camp skatepark ramps, and affiliated with Playworld Systems, Inc., local distributor for our area:
Dave Bang Associates, Inc.
2681 Dow Avenue, Suite E
Tustin, CA 92780
Phone: 714-832-6670
Toll Free: 800-669-2585
Fax: 714-832-9974

e-mail: bangca@pacbell.net
web site: www.davebang.com

Manufactured ramps are to be bolted to a flat post-tension slab. The use of a skatepark design specialist consultant is not mandatory when designing a park using manufactured ramps. Review by the City's "in-house" skatepark representative and the skater workshop are still required. This type of design is generally limited to "Beginner" level parks, 5,000 square feet maximum. The Concrete Bowl Type Construction requirements for finish and jointing also apply to this slab (even though the slab is post-tensioned, some shrinkage cracking will occur and the skateboard wheels will spall these cracks; therefore, do provide control joints, filled and ground the same as a poured in-place bowl described above so the filling and grinding lines are for the most part in a regular pattern); the contractor qualification and coping requirements do not apply to this type of design.

DESIGN STANDARDS
Division 2 – Site Construction

02882 Recreational Facilities & Playground Equipment – Tot Lot Play Equipment

Standards. Comply with the latest versions of:

- The Proposed Accessibility Guidelines for Play Areas as published by the Architectural and Transportation Barriers Compliance Board.
- U.S. Consumer Product Safety Commission's Handbook for Public Playground Safety.
- ASTM F 1487 and ASTM F1292, latest editions.

Qualified Manufacturers. List the following manufacturers, Miracle Recreation Equipment Company, GameTime, Landscape Structures Inc., Playworld Systems, and BigToys, and provide a design that can reasonably be bid by these manufacturers from their standard equipment. In addition, a limited number of unique individual stand alone elements may be provided in the design that may not have an equal among these listed manufacturers or may be provided by other manufacturers such as Kompan Elements.

Equipment must meet the requirements of ISO 9001 (quality systems) and IPEMA Certification (third party testing for compliance with ASTM F1487 and ASTM F1292, latest editions. IPEMA is the International Play Equipment Manufacturers Association).

Do not specify wood products.

Age Groups. Do provide separate play areas for younger 2-5 and older 5-12 age children as recommended by the CPSC guidelines, with sufficient distance to not interfere with each other. Note that if only one area if provided, for liability reasons the manufacturers will likely insist it be for the age 2-5 equipment only.

Resilient Surfaces. Provide resilient surfaces as required by the above standards and best practice. Do not use sand in the play areas. Provide a compacted Type II pad under the resilient surface per resilient surface manufacturer's details. Consider fading when selecting colors for the resilient surfaces and the effect of irrigation over-spray.

Boulders. Place no boulders within 10 feet of playground equipment nor anywhere children may be running or playing and a fall may result in injury. Groups of boulders for climbing by children may be acceptable.

Traffic. Vehicle parking and circulation should be located at least 50 feet from the tot lot area. Fencing will be considered to separate vehicles when the 50-foot minimum cannot be achieved.

Pedestrian traffic paths (joggers, bikes, scooters, etc.) should not run through or immediately adjacent to the tot lot area.

Seating. Provide bench type seating for adults (not picnic tables) adjacent to the tot lot area. Provide shade for at least some of this seating.

Shade. Provide fabric shade structures over the playground equipment as programmed and within budget limitations, together with trees until they mature so that the fabric structure can be eliminated over time. See Section 2875 Site Shelters for additional information and requirements.

Rockers. Avoid specifying the coil spring type rockers in favor of the leaf spring types due to maintenance.

Due to high frequency of maintenance on any of the spring rockers, bringing the resilient play surface right up to the support necessitates cutting away the cushion surface and patching, making the repairs an extra difficulty. There is still an appetite to include these activities in play areas, but if you specify the 4-seaters,

the whole center portion can be on sand to facilitate repairs, with the resilient surface around the perimeter. (See City standard drawing.)

Irrigation. No spray heads within potential over-spray distance of the resilient surface.

Drinking Fountain. Provide a drinking fountain (City standard free-standing design) within 50 feet of the tot lot area and within sight lines of the adjacent adult seating.

Lighting. Verify with the OAS project manager whether to light the Tot Lot Equipment. In general, provide lighting for evening use, utilizing the City standard user timer controls, IF other activities in the park are lighted for evening use such as ballfields, tennis courts, skateparks, etc.

Boundless or Sensory Play Designs. When included in the program for the park, design the play area as a "Boundless" or "Sensory" experience, which basically provides ramp access to most or all activities. See Washington Buffalo Park for an example, also this email link, graphic, and web site.

02900 Planting

Plant Selection. Select plant material for drought tolerance, adaptability and relationship to the local environment; color, form, pattern, soil retention, ability to provide shade and energy savings.

> *All plant prohibitions have been suspended indefinitely, as of 3/9/05.* Link to the CLV research for Allergic, Toxic, and Invasive plants.

Landscape Plans. Plans shall include all plant material information, plant legend with key, botanical name, common name, specific plant requirements, quantity and size. Plant material shall have identification tags on 10% of the total quantity of each species. (Waterproof tag bearing legible designation of botanical and common name) Patented or trademark plants must all bear appropriate tags.

Quality Assurance. Provide trees, shrubs and ground cover of quantity, size, genus, species, and variety shown and scheduled for landscape work and complying with recommendations and requirements of ANSI Z60.1 American Standard for Nursery Stock and/or Arizona Nursery Standards. Provide healthy, vigorous stock, grown in recognized nursery in accordance with good horticultural practice and free of disease, insects, eggs, larvae, and defects such as knots, sunscald, injuries, abrasions, or disfigurement. The Landscape Architect shall inspect trees and shrubs either at the place of growth or at the site prior to planting for compliance with requirements for genus, species, variety, size, and quality. The Landscape Architect reserves the right to further inspect trees and shrubs for size and condition of root ball and root system, insects, injuries and latent defects, and to reject unsatisfactory or defective material at any time during the progress of the work. Remove rejected trees, shrubs or ground cover immediately from the project site.

All sizes and caliper shall comply with the American Standard for Nursery Stock and/or Arizona Nurseryman's Association.

Delivery, Storage and Handling. Contractor shall notify the City 24 hours prior to any plant material being delivered to the site. Protect plant material from deterioration during delivery and while stored at the site. Do not bend or bind-tie trees or shrubs in such a manner as to damage bark, break branches, or destroy natural shape. Do not drop boxes during delivery. Do not prune prior to delivery unless otherwise approved by the Landscape Architect. Deliver plant material after preparations for planting have been completed and plant immediately. Do not install plant life when ambient temperatures may drop below 35 degrees F or above 100 degrees F. Do not install plants when wind velocity exceeds 20 mph.

Warranty. Warranty all plant material for a period of one year from the date of substantial completion. Warranty the plant material against defects including death and unsatisfactory growth, except for defects resulting from neglect, abuse or damage by others, or unusual incidents beyond the installer's control.

Remove and replace plant material found to be dead or in unhealthy condition during the warranty period. Replace plant material, which are in doubtful condition at the end of the warranty period, unless, in the opinion of the Landscape Architect, it is advisable to extend the warranty period for a full growing season.

Maintenance. Maintain plant material for 90 days beyond the date of substantial completion if the project contains any turf. Otherwise there will be no extended maintenance period.

Maintenance shall include, but not be limited to:

- Mow lawns one a week without cutting more than one-third of the lead blade.
- Fertilize lawns on a monthly basis with the last application being a slow release fertilizer applied at the manufacturer suggested rate for the specific time of year.
- Irrigate sufficiently to saturate the root systems of all plant material and lawn areas.
- Cultivate and weeding of all planter areas and tree pits.
- Apply herbicides for weed control in accordance with manufacturer's instructions. Remedy

damage resulting from use of herbicides.
- Prune, including removal of dead or broken branches and treatment of pruned areas or other wounds.
- Provide disease control.
- Maintain tree stakes and replace when required.

Plant Material. Provide plant material of size, genus, species, and variety shown and scheduled for landscape work, grown in climate conditions similar to those in locality of the work.

Container sizes listed are minimums. Minimum height, spread and caliper sizes shall be met. Measure height and spread to the average overall size of the plant, not the longest branch. Caliper shall be measured six inches above graft or six inches above the root ball. Conform to the requirements of ANSI Z60.1 for tree branching configuration and shrub cane quantities for the type and species of each plant specified. Plant spacing shall account for mature plant sizes. Do not over plant. Avoid the use of plant species and spacing that collect leaves and trash. Thick shrubs should be no taller than three feet high. Avoid tree canopy less than seven feet high in pathway areas.

All shrubs shall be 5-gallon minimum. All trees shall be 24" box minimum, with larger box sizes required along pathways and around tot-lot and picnic areas for shade. In hardscape areas, provide at least a four-foot square cut out area in the concrete for tree, irrigation and proper ventilization/airation. Trees planted in turf areas shall be spaced a minimum of six-feet apart to allow for mowing berth. Planting areas shall not exceed 3 to 1 slope. Any disturbed slopes shall be re-vegetated with erosion protective planting.

Olive Trees. Include the following requirements in the landscape specifications when specifying low pollen olive trees:

1. The requirement that Wilson and Swan Hill olive trees must be from nurseries on the Clark County Department of Air Quality & Environmental Management "exempt status" nurseries list, current at the time of planting.

2. The requirement to follow all Clark County Department of Air Quality and Environmental Management Regulations for the approval and planting of these trees. Consultant needs to go read the latest version for compliance factors to include in the specifications.
http://www.co.clark.nv.us/air_quality/Regs/SECT44%2007-01-04.pdf

3. The requirement for an early submittal to the Owner for evidence that the proposed nurseries are on the Air Quality exempt list. Failure to provide an early submittal and order for the trees shall not be justification to substitute specified varieties, such as Wilson for Swan Hill.

4. A requirement for the exempt nursery providing any Wilson trees to provide a DNA testing report or other evidence acceptable to the Owner to guarantee that the actual Wilson trees to be provided are the low pollen cultivar Wilson trees specified. It is known that the nursery industry has been innocently cloning and distributing misidentified Wilson trees. A tree tag or visual inspection is not adequate proof of a Wilson cultivar. This DNA requirement is not needed for Swan Hill trees.

4. A requirement that the Contractor must have written notice to proceed from the City Construction Representative that the delivered trees are acceptable to plant.

5. A requirement that the Contractor notify Clark County Department of Air Quality after contract award so that Air Quality has the opportunity to approve the project distribution, delivery, and planting plan for the olive trees, and to verify compliance by whatever documentation and inspection they require of the Contractor, Subcontractor, and Supplier.

Air Quality olive tree point of contact: Patricia Riggenberg, (702) 455-1646

6. A requirement to copy the City Environmental Officer, Cheng Shih, and City Construction

Representative for each contact with Air Quality.

7. The requirement that the Contractor must provide the following documentation prior to payment:

   a) Approved Owner submittal for proposed nurseries, evidencing they are on the Air Quality exempt list.
   b) An approved DNA testing report for any Wilson trees being provided.
   c) Written notice to proceed to plant delivered trees from the Construction Representative.
   d) A copy of the shipping invoice showing each tree tag number.
   e) Adequate documentation tracing the route and ownership of each tree from nursery to project site.
   f) A photo of each planted tree with readable tag number attached; overall view of tree in project context showing tag and a close-up view of the tag.

8. Tags are to be left on the trees.

Planting Preparation. Layout plant material per plan for Landscape Architect's acceptance/approval prior to planting. Excavate pits with sloping rough sides. Planting holes shall be excavated to 3 to 5 times root ball width, and to the depth of the root ball. Fill all excavations with water and allow to percolate out prior to planting. Water shall drain out within a 24-hour period. If the water does not drain out within a 24-hour period, or if caliche is encountered, the contractor shall comply with the following: If impervious layer is less than 6" thick remove completely. If layer is 6"-18" thick, auger a hole through the layer and install a 4" diameter PVC pipe(chimney) filled with 3/8" pea gravel through the caliche layer at the bottom of the planting pit. If layer is greater than 18", notify the owner for potential plant relocation or owner's credit. Place plants for best appearance, vertical, and root ball flush with finish grade. Backfill with specified planting mix, place fertilizer tablets as required, and saturate the soil with water when the pit is half full of soil and again when full.

Sod-Turf. Do not plant any turf unless there is a specific request and need in the project program; this includes parks. Limit lawn areas in projects to a maximum of 50% of the site area outside of athletic fields, building footprints, parking lots, drives, and similar hardscape and activity areas.

Minimum width of turf areas shall be six feet wide. Turf edge geometry shall match standard irrigation sprinkler head patterns, and not rely on limited pattern edge pop-ups to prevent overspray. All turf areas shall be sodded (not seeded), unless otherwise directed. Turf areas shall not exceed 5 to 1 slopes.

Consider separating turf from sidewalks, parking lots and buildings with a minimum of a three (3) foot wide decomposed granite bed or similar divider to limit the turf irrigation overspray onto these surfaces. Provide mow curb between turf and other ground materials, concrete with rebar reinforcing, 12 inch wide, radiused edges, with control joints @ 10' and expansion joints @ 30'. Refer also to Section 03001 sidewalk topic for related requirements.

Specify bermuda (419 or Sports Tif), unless there is a specific request for fescue. Programmed athletic fields should be synthetic turf if funding allows. Discuss with the project manager whether Bermuda sod needs to be ordered overseeded for a winter project opening.

Contract with a sole source grower specializing in sod production and harvesting with a minimum of five years experience. Coordinate sod installation with soil preparation and the underground irrigation system. Loosen subgrade for sod areas to a minimum depth of 6 inches. Remove sticks, stones and all other extraneous matter. Fine grade areas smooth, even surface with loose, uniformly, and fine textures filling depressions. Verify final grades that all areas drain properly prior to placing sod. Moisten lawn areas, fertilize areas receiving sod, and lay sod with tightly fitted joints. Stagger sod to offset joints in adjacent courses. Lightly roll to ensure contact with subgrade and water thoroughly after placing to saturate the sodden areas to a depth of four inches.

Soils. Prior to delivery of topsoil, furnish the Landscape Architect with a written statement giving the location from which the topsoil is to be obtained and an agricultural analysis of the topsoil to be used.

Provide an agricultural soils test for both import and native soils to be used. All soil used for plantings, whether on-site or import shall meet the following requirements:

- Sandy or loamy sands from well-drained sites
- Free from refuse, roots, heavy clay, stones larger than one inch in largest direction, gravel, sticks, brush litter and other deleterious substances
- Less than ten (10) percent clay content and more than seventy-five (75) percent sand content
- Salinity- Ece no greater than four mmhos/cm
- Water holding capacity between 40 percent and 55 percent
- Boron- less than one ppm
- pH- less than 8.5

Soil Amendments.
Fertilizer. FS O-F-241, Type I, Grade A; with fifty percent of the elements derived from organic source; of proportion necessary to eliminate any deficiencies of topsoil as indicated in the soil analysis.

Mulch. "Nutri-Mulch" organic composted manure, weed free, no particle size over one-half inch, pH level 7.5 or less, providing naturally one percent of available nitrogen, phosphorous and potassium.

Soil Sulfur. In quantities necessary to eliminate any deficiencies of topsoil as indicated in the soil analysis.

Conditioning Fertilizer. A Gro-Power Plus- humus with soil penetrates added, providing five-percent nitrogen, three percent phosphorous, and one percent potassium.

Iron Sulfate. In quantities necessary to eliminate any deficiencies in the topsoil as indicated in the soil analysis.

Water. Clean, fresh and free of substance or matter, which could inhibit vigorous growth of plants.

Herbicide. As needed.

Pesticide. As needed.

Decomposed Granite. Decomposed granite material, free of foreign substances, color as indicated on the drawings.

- In planting areas: 1/4" minus size with 40% fines and 60% aggregate, minimum depth 2".
- Within 3' of sidewalks, pathways, pedestrian traffic areas, and in parking lot planters: 3mm size, minimum depth 4".

Contractor to provide supplier verification of specification to the Owner prior to any construction.

Approved Suppliers:

Mineral Park Inc.
8275 N. Mineral Park Rd.
Kingman, AZ 86413
(702) 275-1371

Kalamazoo Materials, Inc.
6975 N. Oracle Road
Tucson, AZ 85704
(520) 575-9601

Decomposed granite shall not be placed until the irrigation system; topsoil and planting operations have been completed within the area indicated to receive decomposed granite. Surface upon which the decomposed granite is to be placed shall be graded, compacted to the density as indicated on the drawings, and treated with a pre-emergent herbicide. Treat the top of the decomposed granite with one more application of pre-emergent herbicide.

Decomposed Granite Pathways. Reference "Section 02001 Site Construction, Soil Hardening Stabilizer – Walking Paths", for accessibility issues when utilizing decomposed granite as a pathway surface

Boulders. Boulders shall be of granite composition and at least 3 cubic feet in size each. Place one quarter of the boulder mass below finish grade.

Rocks. Other than boulders and decomposed granite, the use of rocks in landscape plans is not allowed due to vandalism unless embedded in concrete. Loose landscape rocks are often used to break windows and light fixture lenses.

Accessories.

Tree Stakes. 2" minimum diameter by 10' minimum length, lodge-pole pine tree stakes, with bottom end pencil pointed. Install tree stakes and indicate on the drawings.

Tree Ties. Tree ties shall be "Twist-Brace" (TB-24) black in color for standard application, and "Wonder-Ties" for multi-applications. Install tree ties and indicate on the drawings.

03001 Design Information

Advertising Marks. No advertising impression, stamp, or mark of any description will be permitted on surface of concrete or cement finish.

Sidewalks. Plain unreinforced concrete is an acceptable walking surface. (Reference "Section 02001 Site Construction, Soil Hardening Stabilizer – Walking Paths", for accessibility issues when utilizing decomposed granite as a pathway surface).

Don't use the word "Jogging" on the drawings; "Walking Path" is acceptable. ("Jogging Path" implies a resilient surface to the public.) For walking/jogging pathways, do not specify a resilient surface, asphalt, or decomposed granite unless so directed by the Owner.

Meandering walks shall not meander to a degree such that people will be tempted to leave the walking surface as a shortcut. Meandering walks may be used interior to the site but not as a substitute for the standard 5-foot sidewalk adjacent to the curb along all streets.

Walks must be a minimum of 5 foot wide with wider walks where justified for ease of heavy traffic. Narrower walks down to 3 foot in width are acceptable where minimal pedestrian traffic connectors are required by ADA.

Where maintenance or security vehicles will be utilizing the pathway, they shall be a minimum of 8 feet wide and 6 inches thick un-reinforced concrete pathway where concrete is used. Especially in parks but also possibly in larger facilities, one such 8 foot wide path needs to connect all of the major elements of the site for maintenance vehicles.

Provide concrete or decomposed granite, without any plantings or irrigation controls, in the inside corners of "T" or "X" walkway intersections where vehicular traffic is anticipated. See Section 02900 for Sod/Turf to sidewalk decomposed granite buffer requirements.

Avoid surfaces and patterns that require special finishing (such as pavers or exposed aggregate) and multiple concrete pours. Special pattern surfaces, patterned control joints, and colored concrete will be considered in limited areas when they do not substantially increase costs.

Control joints in large areas shall be saw cut or zip strip only, with tooled joints tightly controlled elsewhere to meet 1/4" maximum radius joint edges.

Mow Strips. Provide a 12" wide concrete mow strips with reinforcing bar(s): 1) under fences located in turf areas, with the fence centered on the strip and the concrete sloped away from the posts, 2) at the edge of turf areas, and 3) elsewhere are needed to separate surface materials.

Building Slab Vapor Barriers. State on the drawings that the vapor barrier under the slab must be continuous WITHOUT ANY PUNCTURES for any purpose including construction stakes and screed supports. This is critical under wood and vinyl floor finishes. (The only exception would be under utility or service spaces where the concrete does not receive a finish and allowing moisture to breath through the surface will not create a problem.)

Patios and Walks adjacent to Buildings. When exterior concrete is located adjacent to buildings, it shall be depressed below the top of building slab elevation to mitigate exterior water from entering the building (in addition to sloping away from the building). The depression shall be ½" minimum (1" preferred) at building walls and windows, and ¼" at doorways (thus allowing for the maximum ½" beveled height change allowed by ADA using an offset saddle threshold).

Shade Structure Footings. The drawings must show that shade structure column footings may not be monolithically poured with the adjacent flatwork concrete due to cracking of the flatwork at the footing edges.

Tennis and Basketball Courts. Specify unbonded post-tension concrete slabs.

Reference Section 02882 Recreation Facilities for additional Tennis and Basketball information.

Include or require the following in the bid documents:

- Contractor or subcontractor doing the work must provide references for five similar successfully executed post-tensioned tennis court projects.
- Post-tensioning contractor must be certified by the Post-Tensioning Institute.
- Design and construction must comply with "American Sports Builders Association" standards (formerly United States Tennis Court and Track Builders Association, USTC and TBA) and the contractor or subcontractor doing the work must be a member of ASBA.
- Isolate slab from surrounding fence posts by placing the fence line over a flush concrete mow strip outside of the court play area. Keep the fence mow strip and post footings structurally isolated from the court slab with expansion material. Provide tooled control joints in the mow strip at the posts and equally spaced between posts to not exceed 5 feet on center.
- Isolate basketball hoop standards, tennis net supports, shade cabanas posts, light pole standards and slab penetrations (where they cannot be located outside of the post-tensioned slab) from the post-tensioned slab with two inches of medium density foam so that the slab can shrink unrestrained.
- Minimum 5" thick slab, with thickened edge.
- Joints:
  - Single courts: provide a key-way construction joint or control joint at the net line.
  - Multiple courts: provide a key-way construction joint between courts and either a key-way construction joint or control joint at the net line. The joint between courts must be outside of the 60-foot clear playing area width.
  - Key-way construction joint to be a standard tongue and groove T-joint. The cabling system can be continued through the joint to allow for tension to be applied at the end of the total slab distance for multiple courts. If rebar dowels are used instead, de-bond one end of the dowel so the concrete slabs can pull away at the joint for shrinkage contraction.
  - The result of the above joint patterning separates the slab into half court size panels for shrinkage.
- Require but do not rely on shop drawings; show a completely detailed and engineered design in the contract documents.
- Slope not less than 1:120 or more than 1:100. Each court must slope in a true plane, preferably from side to side (but from end to end or from corner to corner also are acceptable). The court may NOT be sloped from the net line to the baseline, from the baseline to the netline, from the sides to the centerline or from the centerline to the sides.
- A concrete mix selection that requires the least amount of water proportion, avoids oversanding, uses the maximum practical size aggregate (but not exceeding 1-1/2"), and a water reducing additive but excludes fly ash and fibermesh additives.

- Show a sand layer and poly sheeting under the slab to facilitate slab movement during shrinkage contraction. The sand is also there to facilitate bottom water bleed. The poly also prevents ground moisture from traveling to the slab surface and delaminating the court surfacing.

- Continuously moist curing for at least 7 days, with the cover then left in place until the cover and the concrete surface appear to be dry, a minimum of an additional 10 days (ACI Publication 224R-01 "Control of Cracking in Concrete Structures," Sections 8.3.2 and 8.6.7); use no curing compounds. Do not use clear or black poly to cover; white poly is acceptable.

- Require an early partial tensioning.

- Require the use of a laser screed and a floor flatness tolerance of F(F) 50 per ASTM E1155.

- Require de-bonded doweling of sidewalks that abut the slab.

- A Pre-Slab Conference, which stresses the importance of minimizing water content of the concrete, rigorous site inspection and responsibility assignments, a quality-control-assurance plan, and a clear understanding of the requirements, details, and performance by the contractor. Link to an article explaining items to cover.

Gymnasium and Other Wood Flooring Concrete Slabs. Specify a flatness tolerance F(F) of 45 and a levelness tolerance F(L) of 35 per ASTM E 1155. See Section 09642 Wood Athletic Flooring, when applicable to a project, for other important design considerations and restrictions for concrete work.

Concrete Skateparks. Reference Section 02882.

Concrete Lighting Pole Bases. Add the following information on the drawings:

"Entire base to be poured monolithically with top of base to have an 1-1/2" dome."

"Sonotube forms to be stripped while still green. Green concrete to be rubbed (stoned) to bring up the "fat" and then finished to a light broom finish. Base to be wet cured (7) days."

"All rebar, anchors, bolts, etc to be called out"

Concrete Pool Decks. Reference Section 13152.

Sealer-Hardener. When designing pool decks and bathhouse floors, park restroom floors, fire station vehicle bay slabs, warehouse and storage building slabs, and similar exposed concrete floor surfaces, specify a penetrating sealer hardener similar to Ashford Formula with a 20 year warranty. Note the limitations on the use of fly ash in the concrete intended for this type of sealer (Click here for technical bulletin explaining limitations). These sealers can also be utilized as the concrete curing agent; see each manufacturer's literature (Click here for a technical bulletin regarding wet curing concrete with ashford formula).

Fly Ash. Except as specifically restricted within these Design Standards (such as for post-tension slabs), the city has no objection to the use of fly ash if the consultant determines it is appropriate to the work.

Architectural Cast-In-Place Concrete. Gain written approval from the City Project Manager before proceeding with a design that utilizes architectural Concrete. Follow the recommendations of ACI 303R-04 (guide to cast-in-place architectural concrete practice) when specifying architectural concrete.

04001 Design Information – Masonry

Rebar. Specify rebar positioners ON THE DRAWINGS.

Grouted Cells. When grouted cells are required, clearly indicate if every cell is to be filled or only certain cells.

Expansion Joints. Locate all expansion joints on the architectural drawing elevations, and coordinate their locations with the structural drawings and specifications.

05001 Design Information

Metal Finishes. Exterior miscellaneous metal work shall be:

- Steel (ferrous): galvanized and painted.
- Aluminum (non-ferrous): anodized or powder-coated.

Bollards, Removable. Removable bollards may be any design acceptable to the city project manager meeting the following minimum requirements:

- Able to accept standard padlock (provided by Owner)
- Slope adjacent concrete surfaces away
- Provide drain hole and gravel sump area under
- All steel to be double coat galvanized

Roof Access Ladders: *(roof access requirements)(see additional access requirements in section 07001 - Roof Hatches).*

The information in this section has information specific to codes that may or may not change in the future. The information is current with such codes as of October / 2004. The information in this section serves only to provide a basic understanding and is not meant to be complete, but rather a summary of the most basic requirements.

Required by:

2000 UMC, Section 910.8, 2003 IBC, Section 1009.12 and 2000 Southern Nevada Mechanical Code (Supplement)

Per the *2000 Uniform Mechanical Code, Section 910.8*: **Furnaces located on the roof of a building shall be readily accessible.** (The building department interprets this as all equipment that needs to be maintained.)

Note: There is no requirement for permanent access to a roof without mechanical equipment.

Exception 1: Permanent exterior ladders providing roof access need not extend closer than eight (8) feet (2438 mm) to the finish grade.

Exception 2 amended by the 2000 SNMC: A portable ladder may be used for access for furnaces on the single-story portion of a Group R, Division 3 and Division 4 occupancies and Group U, garages and carports.

Exception 3: Permanent ladders for equipment access need not be provided at parapets or walls less than thirty (30) inches (762mm) in height.

Exception 4: added amendment by the 2000 SNMC: Furnaces installed on a roof not exceeding sixteen (16) feet in height above grade may be accessed by a portable ladder.

Per the *2003 International Building Code, Section 1009.12 Stairway to roof*. **In buildings four or more stories in height above grade, one stairway shall extend to the roof surface, unless the roof has a slope steeper than four units vertical in 12 units horizontal (33-percent slope). In buildings without an occupied roof, access to the roof from the top story shall be permitted to be by an alternating tread device.**

Restrictions: Although it is not desired, there are no restrictions in the Zoning or Planning

ordinances/codes that restrict roof access ladders (whether visible or not from the public way). Beware, planners may interpret them similar to mechanical equipment and therefore try and impose the same restrictions. Renderings submitted for site development plan review shall accurately portray the appearance of everything as closely as possible to avoid objections coming up at a later date.

Construction Requirements; References; 2000 UMC, 2003 IBC, OSHA and ANSI Requirements

The following list of requirements is not meant to be complete, but rather a summary of the most basic requirements.

- Permanent ladders shall have side railings that extend at least thirty (30) inches above the roof edge or parapet wall; 2000 UMC, section 910.8.1.
- Have landings less than eighteen (18) feet apart measured from the finished grade; 2000 UMC, section 910.8.2.
- Be at least fourteen (14) inches in width; 2000 UMC, section 910.8.3.
- Have rungs not more than fourteen (14) inches on center; 2000 UMC, section 910.8.4.
- Have a minimum of six (6) inch toe space; 2000 UMC 910.8.5.

05001 Design Information

Metal Finishes. Exterior miscellaneous metal work shall be:

- Steel (ferrous): galvanized and painted.
- Aluminum (non-ferrous): anodized or powder-coated.

Bollards, Removable. Removable bollards may be any design acceptable to the city project manager meeting the following minimum requirements:

- Able to accept standard padlock (provided by Owner)
- Slope adjacent concrete surfaces away
- Provide drain hole and gravel sump area under
- All steel to be double coat galvanized

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Note: There is no requirement for permanent access to a roof without mechanical equipment.

Exception 1: Permanent exterior ladders providing roof access need not extend closer than eight (8) feet (2438 mm) to the finish grade.

Exception 2 amended by the 2000 SNMC: A portable ladder may be used for access for furnaces on the single-story portion of a Group R, Division 3 and Division 4 occupancies and Group U, garages and carports.

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ordinances/codes that restrict roof access ladders (whether visible or not from the public way). Beware, planners may interpret them similar to mechanical equipment and therefore try and impose the same restrictions. Renderings submitted for site development plan review shall accurately portray the appearance of everything as closely as possible to avoid objections coming up at a later date.

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- Be at least fourteen (14) inches in width; 2000 UMC, section 910.8.3.
- Have rungs not more than fourteen (14) inches on center; 2000 UMC, section 910.8.4.
- Have a minimum of six (6) inch toe space; 2000 UMC 910.8.5.

06001 Design Information – Wood & Plastics

Pressure Treated Wood. It has come to our attention that pressure treatment for wood that includes arsenic in the solution has gained favor by trial lawyers. Specify that pressure treatments shall not include arsenic. This composition will be banned sometime in 2003, but sick building syndrome type lawsuits have been filed related to arsenic solutions used in pressure treatments for foundation grade lumber.

Mold on Lumber. Include provisions that lumber delivered to the construction site that has mold on it is acceptable to use ONLY IF the mold is sanded off BEFORE it is incorporated into the construction or brought within the building area (outside the structure). All visible mold must be sanded off all surfaces of the contaminated lumber one foot beyond the visibly contaminated area.

07001 Design Information

Flashing and Sheet Metal. Included in Section 07300 Roof Coverings.

Roof Hatches. *(see additional access requirements in section 05001 - Roof Access Ladders).*

The information in this section has information specific to codes that may or may not change in the future. The information is current with such codes as of October / 2004. The information in this section serves only to provide a basic understanding and is not meant to be complete, but rather a summary of the most basic requirements.

Required by:

2003 IBC

International Building Code, Section 1009.12., Roof Access, Exception: **In buildings without an occupied roof, access to the roof shall be permitted to be a roof hatch or trap door not less than 16 square feet (1.5 square meters) in area and having a minimum dimension of 2 feet (610 mm).**

Commentary 1: Ladder extensions and/or grab bars are not required at roof hatches with permanent access ladders. See commentary; OSHA

Commentary 2: Roof hatches left in the open position are hazardous. ANSI standard A1264.1 – 1995, Safety requirements for Workplace Floor and Wall openings, Stairs, and Railing Systems, requires guardrail protection for the exposed sides of ladder way openings in any working/walking surface. Therefore, unprotected openings in roofs could be cited under the general duty clause of the Occupational Safety and Health Act, which requires an employer to provide a workplace free from recognized hazards. See commentary; OSHA

Roof Hatch – Safety Railing.

Note: The safety railing is not required per any codes, but is a safety measure required by the city.

Manufacturer: Babcock-Davis, Standard Model No. RHSR-SS (minimum 42" high above roof elevation)

See manufacturers information for alternate railing designs where it may be necessary to step off ladder to one side or the other.

07001 Design Information

Flashing and Sheet Metal. Included in Section 07300 Roof Coverings.

Roof Hatches. *(see additional access requirements in section 05001 - Roof Access Ladders).*

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See manufacturers information for alternate railing designs where it may be necessary to step off ladder to one side or the other.

07210 Building Insulation

Provide more than the normal minimum of building insulation. The City is a long-term property owner so do consider the energy savings over the life of the building in determining payback.

Exterior Wall Assembly: Provide a minimum of R-19, for example:

- Studs. 6" Nominal stud minimum for the building envelope with R-19 fiberglass batts.
- CMU. Provide 2" interior and 2" exterior (or equal combination) rigid insulation providing a minimum R-20. When using Exterior Insulation Finish System (EIFS), do not use in high traffic areas where it will show pedestrian wear.

Roof / Ceiling Assembly: Provide a minimum of R-38.

Radiant Barriers: Consider their use, when a generous plenum or attic space is present. Place the barrier on the underside of the roof assembly facing the attic space.

Interior Wall Assembly: Specify a minimum of STC 45 wall assembly for all interior office, conference rooms, restrooms, and other occupied room partitions. Consider higher ratings, including double wall assemblies, between noiser spaces (larger conference rooms-meeting rooms-classrooms) and adjacent offices.

- Interior studs, gypsum board, and sound batts to be continuous to underside of slab, or alternately, if a partition just penetrates the suspended ceiling, lay continuous sound attenuation blanket 4'-0" on each side of partition over a suspended ceiling. Partitions that terminate at the ceiling are not permitted.
- Caulk the perimeter of the partition under the edge of each base layer of gypsum panel and around all penetrations including electrical boxes with a continuous bead of acoustical sealant.
- Flank the finished floor material into the partition. Do not place or float partition over flooring material.

07300 Roof Coverings

Related Sections.

Reference Section 02001 Design Information – Site Construction for waterproofing systems on the backside of retaining walls.

General.

- The contractor shall provide flood testing and City acceptable report for all roofs, regardless of the roofing material or slope.
- Consultant must accurately calculate and locate the actual roof slopes, crickets, and valleys on the roof plan, no approximations or general design descriptions.
- Provide sheet metal copings on all parapets and similar roof edge caps.
- Note on the drawings or in the specifications that the roofing installer is to build to the greater quality/quantity of the detailing indicated in the contract documents or the manufacturer's recommendations.
- Always specify a "pre-sloped" manufacturer's curb for roof mounted equipment (NO site built curbs).
- No pitch pockets.
- No surface mounted conduits or piping allowed on the roofing surface.
- Do not allow roof drain flows onto sidewalks.

Code Requirements. The consultant shall research Sections 1504 & 1609 of the 2003 I.B.C. with regard to wind loading requirements of roof assemblies. Roof manufacturers will warranty their roof for a given number of years with a given maximum wind speed (for example, a roof will come with a 15 year warranty for wind speeds up to 72 mph). All roofing types (clay tile, metal roofs, single ply, asphalt shingle, etc) need to be evaluated for performance requirements for wind resistance. These performance requirements are calculated based on equations in Section 1609 of the 2003 I.B.C. The code requires that wind pressures be evaluated for each and every building based on a building's importance factor, category, and exposure, window opening sizes, etc. The consultant is responsible for computing the wind pressures for the roof of their particular building and evaluating the performance of their roofing system to determine that the roofing system will be able to handle the wind pressure as calculated by the code. A computer program for calculating wind pressures is available at www.digitalcanal.com. The consultant will also need a copy of ASCE 702 document to use in conjunction with the computer program. Factory Mutual and the American Society for Civil Engineers also publish tables which can be used to calculate wind pressures. Factory Mutual publishes a "Loss Prevention Data Sheet – Documents 1-28 & 1-29" and ASCE publishes the ASCE 7 tables for wind load pressures.

Consultants should keep in mind that some roofing manufacturers will publish that their roof will pass the Factory Mutual 1-90 roof test (which means that the roof was tested by Factory Mutual to withstand wind pressures of 45 psf.). However, the wind pressure will need to be calculated for the specific building and the specific site, so that the consultant can be assured that the wind pressures acting on your building are less than the wind pressures that Factory Mutual warrants their roof for.

Preferred System. Unless specifically directed otherwise, specify 60 mill thermoplastic polyolefin (TPO) membrane fully adhered roofing system. The roofing system option would require a fleece back TPO membrane, fully adhered to a composite fiberboard using type 3 or 4 hot-mopped asphalt. The composite fiberboard is mechanically fastened over rigid insulation (thickness of rigid insulation and composite fiberboard shall provide at least an R30 insulation value). The rigid insulation would typically be fastened over metal decking. The fleece backing on the TPO membrane is required so that the hot-mopped asphalt doesn't bleed through to the top of the TPO membrane and the composite fiberboard is required because it provides an acceptable substrate for the type 3 or 4 hot-mopped asphalt. Please consult the manufacturer's literature for all requirements for this fully-adhered single ply roofing system. ICC & ES Reports are available for fully adhered roofing systems and supply information regarding the wind

pressures that this type of roofing system will withstand.

Alternate System (same as Preferred System except as noted). Specify 60 mill thermoplastic polyolefin (TPO) membrane fully adhered roofing system. The roofing system option would require a fleece back TPO membrane, fully adhered to a composite fiberboard using foam adhesive. The composite fiberboard is an optional component of the roofing system and the single ply roof may be directly adhered to the R30 rigid insulation if desired. The rigid insulation would typically be fastened over metal decking. The fleece backing on the TPO membrane is required so that the adhesive doesn't bleed through to the top of the TPO membrane. The composite fiberboard may be added to this roofing system in order to increase the roofing system's ability to withstand wind pressures. Please consult the manufacturer's literature for all requirements for this fully-adhered single ply roofing system. ICC & ES Reports are available for fully adhered roofing systems and supply information regarding the wind pressures that this type of roofing system will withstand.

0504-SWHM.pdf
(255 KB)

Manufacturer's . The following manufacturer's are not allowed on City Buildings:
Carlisle Syntec (Failure to respond to warranty work)

Installation (NOTE THIS IS A DEPARTURE FROM THE NORM). The installer of roof coverings shall be responsible for all flashing and counter flashing (including parapet copings) to insure a complete watertight roofing system installation. Provide this information in Section 07300 Roof Coverings and Section 07620 Sheet Metal Flashing & Trim.

Required Pre-Roofing Conference before roofing starts. Contractor is to coordinate this conference with the Roofing, Flashing, HVAC, Stucco, Membrane, and other moisture protection sub contractors. A Pre-Roofing checklist will be provided by the City.

Roof curbs and parapets. Membrane roofing is to continue up over the top and down for all roof curbs and parapets. Counter flashing must also be provided. See required details.

Warranty/Guarantee. Specify a minimum manufacturer's warranty of 15 years. Do not specify a bond.

In addition to the manufacturer's warranty, require in the specifications that the contractor guarantee the roofing and associated work remain absolutely watertight and free from all leaks, due to faulty or defective materials and workmanship for a period of five (5) years. Sample specification language:

> The General Contractor does hereby guarantee the roofing and associated work including but not limited to all flashing and counter flashing both composition and metal, roof decking and/or sheathing; all materials used as a roof substrate or insulation over which roof is applied; promenade decks or any other work on the surface of the roof; metal work; gravel stops and roof expansion joints to be absolutely watertight and free from all leaks, due to faulty or defective materials and workmanship for a period of five (5) years, starting on the date of Substantial Completion of the Project.
>
> The General Contractor also guarantees that during the Guarantee Period he will, at his own expense, make or cause to be made such repairs to, or replacements of said work, by a roofing contractor approved and certified by the manufacturer to install the accepted roofing system, in accordance with the roofing manufacturer's standards as are necessary to correct faulty and defective work and/or materials which may develop in the work including, but not limited to: blisters, delamination, exposed felts, ridges, wrinkles, splits, warped insulation and /or loose flashings, etc. in a manner pursuant to

the total anticipated life of the roofing system and the best standards applicable to the particular roof type in value and in accordance with construction documents as are necessary to maintain said work in satisfactory condition, and further, to respond on or within three (3) calendar days upon proper notification of leaks or defects by the Owner or Architect.

This General Contractor guarantee is limited to the work performed by the general contractor and does not extend to: (1) alterations or additions to the roof performed by other contractors, (2) damage caused by lightning, windstorm, hailstorm and other unusual phenomena of the elements, or fire, (3) damage to the interior contents of the building such as furniture and files not attached to the building, and (4) damage or abuse of the work caused by others not associated with the General Contractor.

DESIGN STANDARDS
Division 8 – Doors & Windows

08001 Design Information – Doors & Windows

General – Doors and Frames.

Materials.

Interior wood doors, when specified, shall be paint grade, solid core. Hollow core may be considered for low usage closet doors only.

Interior door frames shall be metal (no wood, see below).

Exterior service doors shall be hollow metal in hollow metal frames.

Exterior entry doors may be any materials compatible with the building design.

Hollow Metal Doors and Frames.

Minimum Standard for manufacture: ANSI A250.8 (1998) [Formerly SDI-100 (1991)], within the following limitations specify level and model as appropriate to the usage.

Exterior

All exterior hollow metal doors and frames shall be galvanized at the factory.

All exterior hollow metal doors and frames shall be seamless (Model 2), factory welded and ground only (plastic filler or caulking is not acceptable).
Exterior doors shall be flush top.

Exterior door face shall be 16-gage minimum (therefore limited to Level 3 or 4).
Exterior door frames shall be 14-gage minimum, heavier gage for wider openings.

Exterior doors shall be appropriately steel stiffened for the usage and completely filled with batt mineral wool, fiberglass, or foam insulation; honeycomb core stiffening is not acceptable.

Interior

Interior door face shall be 18-gage minimum (therefore limited to Level 2, 3 or 4).
Do not specify seamless edge for interior doors (therefore no Model 2).

Interior door frames shall be hollow metal, either welded or knockdown. Knockdowns are preferred for remodels although City crews are reluctant to relocate/re-use them, welded is preferred for new construction.

When specifying welded interior door frames, they shall be 16-gage minimum, heavier gage for wider openings.

Glass Block. Due to vandalism problems, the use of glass block is prohibited on all projects. This includes plastic and vandal resistant versions of glass block.

General – Glazing.

Limits.

1. Limit manufacturers to those capable of timely replacement.
2. Specify dual pane.
3. There are no limits on color, reflectance, or transmission as long as the consultant can justify selection.

Consideration

1. Evaluate the orientations of glazing and the different glazing attributes available for the best efficiencies in daylighting, solar heating, shading, ventilation and aesthetic value.

Skylights. Consideration needs to be given to making any skylights burglar resistant. Bars on the outside are preferable over bars located on the inside to deter break-in attempts.

08710 Door Hardware

Reference "Section 13700 Security Access and Surveillance Access Control" for the City card entry system. Reference "Section 16001 Design Information – Electrical" for special door hardware requirements prescribed by the National Electrical Code.

Use this section as the basis for scheduling hardware unless matching existing hardware in a remodel or expansion. A normal amount of deviation from these standards is expected in new construction but must be approved by the City Project Manager.

The City's justification for only two sources for each item is the necessity for the City to stock these parts in order to keep its property secure and exiting safe at all times. No substitutes beyond the two listings.

Cylinders. Best I/C Core 7 pin housings with Best / Kaba Peaks Cores, depending on the location and the end user situation, to be determined by D&E Locksmiths. Contractors will supply construction cores. The City of Las Vegas Locksmiths will install City cores after C of O. Keyed cores will be ordered by the City of Las Vegas, D&E Locksmiths.

[Note: no core substitutions allowed. This sole source manufacturer is required to match the City of Las Vegas master key system.]

Exit Devices. Von Duprin 99EO (with Alarm Kit – 99EO ALK) or 33 Series devices, finish 26D Dull Chrome, unless matching existing hardware finish. For pairs of doors, when building codes permit, use rim devices with keyed removable mullions.

Electric Locks for Card Access. Electrified Von Duprin Exit devices with Von Duprin Electric Strikes or Hes equivalent.

[Note: no exit device substitutions allowed. The cost to stock additional manufacturers is to costly since the items can cost up to a $1,000.00 per item]

Mortise Locks. Best 35H 14H (35H Series, 14H trim design) or Schlage L9000 Series equivalent.

Cylindrical Locks. Best 93K14D (93K Series, 14D trim design) or Schlage D Series equivalent.

Door Closers. LCN 4041 Series (4041 is the ADA compliant model of the 4040 Series) or Norton 7500 Series equivalent.

Cabinet Locks. All cabinets & drawers that need to be secured should accept Best Cores. Use original Best cabinet locks or Olympus with Best Cores.

For Special Applications Contact:
City of Las Vegas, Detention & Enforcement
Kirk Miley, Sr. Locksmith
3300 Stewart
Las Vegas, Nevada 89101
(702) 229-6617

Best Access Systems already has this address and contact as their shipping designation for the City of Las Vegas. Click here to view the keying process.

(continued)

Accessories – Exterior Doors.

Specify:

- Top rain drips (unless otherwise protected)
- Perimeter weather-stripping.
- Bottom sweeps (no felt or brush materials, no automatic door bottoms).
- Thresholds:
  - Set in full bed of mastic.
  - Use only a ½" ADA offset saddle threshold so exterior landing can be set ¼" below the building slab. Specify similar to Reese S514, S714, S239, or S245.
  - Do not specify a threshold ramp extending out from the doorway similar to Reese S411.
  - See Section 03001 Concrete for additional information.
- Latch protection plates on exterior hollow metal doors.
- Locking hardware for glass and aluminum exterior doors that is of a design where latch protection is not required.

09001 Design Information - Finishes

Standard Finishes - City Hall Campus Facilities

The use of these City Hall Campus finishes are recommended for consideration in all city facilities for continuity and maintenance purposes.

Carpet. The City Hall Campus uses a standard carpet that can be purchased using the County's purchasing contact. Click here to link to a generic specification for this carpet.

Other facility locations may use this same carpet or any other carpet appropriate to usage. Carpet tiles are an acceptable alternative to rolls depending on usage.

Rubber Base. The City Hall Campus uses a standard 4-inch cove base by Burke, Savannah, 514 (use cove at all floor finishes).

Paint. The City Hall campus uses a standard paint color by Sinclair, Warm Oyster.

Modular Furniture. Reference Section 12500 – Furniture, for further information and finishes.

Finish Restrictions and Requirements - All City Facilities

The following finish standards and restrictions apply to all city facilities.

Tile Joints. Provide tile expansion joints (sealant and backup) over all concrete slab cold joints and saw-cut control joints. Dimension the locations of these joints on the foundation plans so that the concrete slab joints occur directly under the tile joints and where possible between full tiles (slab control joints should be laid out on the same module as the tile, i.e. 6", 8", 12" etc.).

Use of anti-fracture membranes may be utilized to minimize the number of control joints and should be considered to limit general movement cracking issues, but any such membrane must be rated by the manufacturer for the installation and must be detailed in strict compliance with the manufacturer's recommendations. Use of such membranes shall not relieve the design consultant of liability for related design defects.

Consider including in the specification a requirement for a shop drawing layout review prior to slab installation.

Ceilings. Ceiling materials other than a suspended accessible acoustical ceiling need to be pre-approved by the CLV Project Manager. Exposed mechanical systems are not uniformly appreciated by staff and management. Ceiling assemblies must provide for the future installation of concealed conduit systems.

Concrete Floor/Slab Coatings. The use of seamless floor/slab coatings are prohibited unless pre-approved in writing above the level of the CLV Project Manager. This applies to both interior and exterior applications.

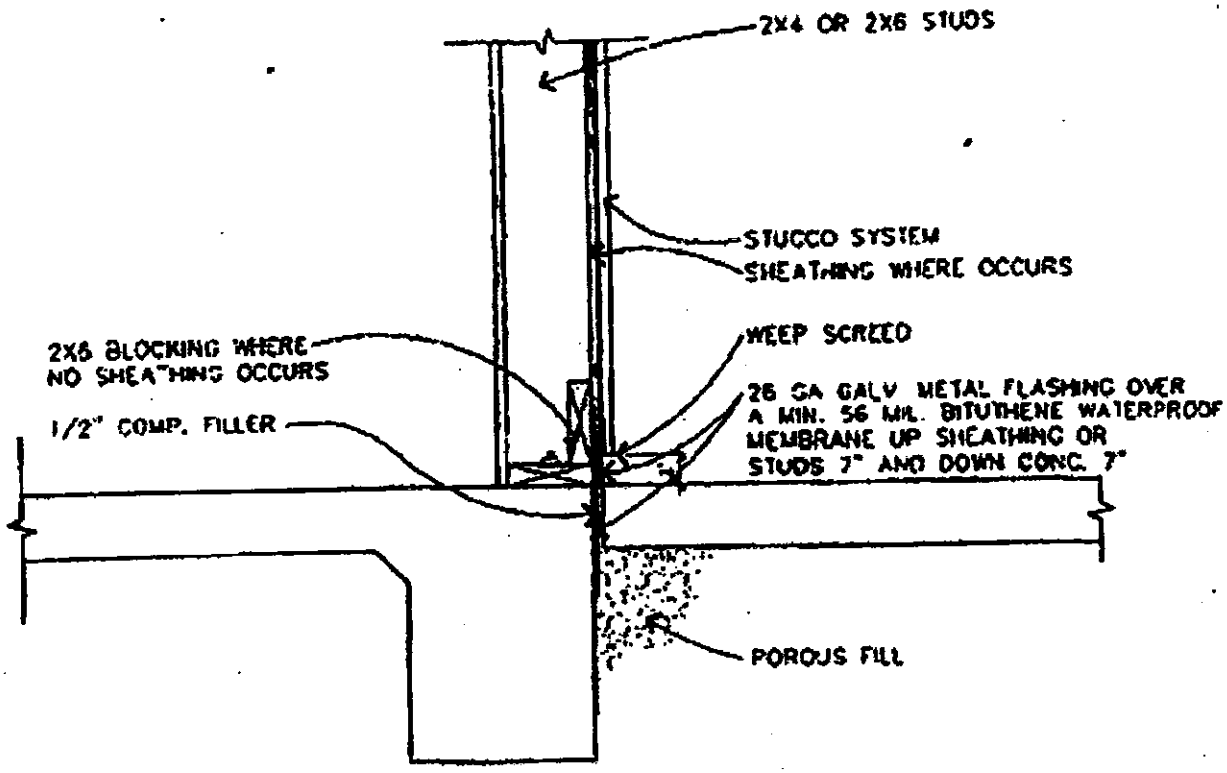
This specifically includes all:

- Opaque painted floor coatings including epoxies and acrylics,
- Systems utilizing a clear protective topcoat,
- Systems with recommended annual maintenance in excess of that required for a VCT floor, or
- Surfaces that may be damaged by unprotected chair and table legs.

Colored concrete and transparent penetrating concrete stains may be specified as appropriate (transparent means that a light colored sample of the product is not capable of concealing variations in concrete color).

Stucco. Always specify 2 layers of paper or felt backing regardless of the substrate material or minimum code requirements. Do not allow an air barrier or house wrap material to substitute for one of these required layers.

Note that concrete walks and exterior door landings are to be set below the elevation of building slabs where adjacent (See Section 3001 Concrete and Section 08710 Door Hardware threshold requirements for additional information), which will require the use of the following type of sheet metal flashing detail to meet building code and functional requirements at exterior door openings.



VCT. Require the contractor to apply two coats of high quality commercial floor polish as part of his work.

09642 Wood Athletic Flooring (Highlighted text in progress)

Reference Section 03001 Concrete for the flatness and levelness tolerances to specify for the slab under wood flooring, or Section 03001 Concrete should reference Section 09642 Wood Athletic Flooring for specific requirements where wood athletic floors will be installed. See special restrictions on placing filler material such as sand between the slab and below-slab vapor barrier, noted below. Slag content is not allowed in concrete slabs beneath hardwood floors.

Due to the insistence of the Department of Field Operations, wood athletic floor systems shall be of the Floating Floor Maple Strip design, also known as a Floating Panel or Double Plywood Floor System. This type of flooring system utilizes a double layer of plywood set on cushions (resilient pads), topped by the finished hardwood floor.

Base.

2 1/2" Recessed Concrete Slab. confirm with system manufacturer for variations due to individual component thicknesses, such as resilient pads and plywood layers. Specify quality control of slab level to a tolerance of 1/8" max variation in a 10 foot radius and compliance with ACI 302 requirements for a Finish Class 9 random traffic slab on grade. Alternative to the 10 foot straight edge level tolerance, slabs under athletic floors may be specified as ACI 302 Composite Overall Multi-Directional F_F45/F_L35 slabs.

Provide poly moisture barrier under and at the perimeter of the slab and on top of the slab, directly below the cushions (resilient pads). The Maple Floor Manufacturers Association has issued a statement that the below-slab vapor retarder be placed directly below the slab, with no fill material (sand, etc.) placed between the slab and the vapor barrier. Such fill material will absorb moisture and release it over time, causing migration of moisature through the slab and into the wood floor system. Consult with flooring mills in determining proper sub slab vapor barrier location under hardwood floors.

Vapor Retarder. Polyethylene sheet 6 mils minimum thick, joints lapped and sealed.

Cushions (Resilient Pads). Manufacturer's standard or upgrade pads to achieve specified DIN scores. Note that within manufacturers' product lines, choices of cushions are available to achieve specific floor characteristics.

Subfloor. Two (2) layers of 15/32" five ply, APA rated sheathing, Exposure 1, unless system manufacturer specifically requires a variation to achieve the specified performance criteria.

Blocking. Where permanent or typically placed heavy loads are anticipated, such as under the stack area of folding bleachers, specify blocking to eliminate deflection of the wood floor. Be aware that such areas will exhibit different performance characteristics such as ball bounce and shock absorption and the design needs to consider the relative importance of designing for heavy objects to be placed in the normal field of play.

Wood Floor.

Floor. 1 ½" x 25/32" mixed grain TGEM (tongue and groove end match) KD northern hard maple, MFMA or NOFMA graded, second quality or better. No yellow maple. Where wood athletic floors will be striped for a multitude of courts or types of activities such as in a multi-use gymnasium, specify First Grade in order that the wood grain markings do not visually distract from the variety and colors of the striping. No warped or curved cut lumber allowed. Mill must be a MFNA or NOFMA approved mill.

Finish. Sand in four directions and three-coat finish in accordance with the standards set by the Maple Flooring Manufacturers Association (MFMA) or National Oak Flooring Manufacturers Association (NOFMA). Provide floor complete with painted lines, vented cove base, flush mounted floor plates and inserts for volley ball standards, electrical, timing covers etc. as instructed by the owner. Pre-finished systems are not acceptable.

Racking. Rack layout to avoid step joints. Less than 5% joints closer than 6" not permitted

Contractors. Installer and his crew must be approved by the mill providing the wood flooring and meet the following qualification criteria and be recognized by the City of Las Vegas as a qualified installer:

City of Las Vegas qualification criteria:

1. Provide written evidence that they have successfully completed the installation of three (3) similar projects during the 5 year period immediately prior to bid opening. The City shall be the sole judge of whether the previous experience was successful.
2. Provide current written evidence that the mill is a MFMA or NOFMA manufacturer approved mill.
3. Provide the name of the installing contractor and its State of Nevada contractor's license number.

DIN Standards. Wood athletic floor systems shall meet certain of the DIN Standard 18032-2 test results specific to the anticipated primary use of the floor (basketball, dance, etc.) See further DIN Standard requirements, below. DIN Certification is not a requirement, but may be considered on projects of elevated importance.

SEE NEXT PAGE FOR THE PERFORMANCE DATA MATRIX FOR FLOATING PANEL MAPLE FLOORING SYSTEMS AVAILABLE BY THE 5 MFMA MILLS. SYSTEMS CONSIDERED COMPARABLE TO EACH OTHER ARE IDENTIFIED BASED ON THE APROPRIATE DIN CRITERIA FOR PRIME FLOOR USAGE. WRITE THE LEAST COMMON DENOMINATOR OF EACH COMPARABLE SYSTEM AS THE REQUIRED DIN PERFORMANCE CRITERIA INTO THE PROJECT SPECIFICATION AND LIST THE FLOOR SYSTEMS THAT MEET THE SPECIFIED CRITERIA IN THE SPEC AND TO DETERMINE EQUIVALENCY OF SUBMITTED PRODUCTS.

SOME PROJECTS WILL REQUIRE SEPARATE PERFORMANCE CRITERIA FOR DIFFERENT SPACES/USES, SUCH AS GYMNASIUMS AND DANCE/AEROBIC ROOMS. USE CAUTION WHEN DETERMINING THE APPROPRIATE PERFORMANCE CRITERIA FOR EACH IN ORDER THAT A SINGLE MANUFACTURER CAN MEET THE PERFORMANCE CRITERIA FOR EACH.

SYSTEMS	DIN STATUS[1]	SHOCK ABSORPTION (53% MIN)	RESILIENCE/ DEFLECTION (2.3MM MIN)	DEFLECTION CONTROL (18% MAX)	BALL REBOUND (90% MIN)	ROLLING LOAD[2] (PASS/FAIL)
AACER FLOORING www.aacerflooring.com						
AacerCush II						
Aacerflex BP	CERTIFIED					
ACTION FLOOR SYSTEMS www.actionfloors.com						
ActionCush I	RATED	45%	1.2mm	18%	95%	PASS
ActionThrust I[3]	COMPLIANT	58.2%	1.75mm	16.3%	95%	PASS
ProAction-Flex[4]	CERTIFIED	57%	2.4mm	10.5%	95%	PASS
ProAction-Thrust	CERTIFIED	60%	2.6mm	13.7%	92%	PASS
CONNOR HARDWOOD COURTS www.connorfloor.com						
Duracushion I		49%	1.4mm	19.5%	93%	PASS
Rezillpanel (½" pad)		64%	1.8mm	21.3%	95%	PASS
Rezillpanel (3/4" pad)		62%	2.4mm	18.5%	94%	PASS
Neoshok (red pad)		61%	1.9mm	21.4%	97%	PASS
Neoshok (blue pad)		63%	2.5mm	24.2%	94%	PASS
Neoshok (black pad)		70%	3.1mm	23.8%	87%	PASS
Sportbond Plus	CERTIFIED	58%	2.3mm	14.9%	93%	PASS
HORNER FLOORING www.hornerflooring.com						
Thrust-A-Cushion						
Safe Panel System						
Balanced (BPS)	CERTIFIED					
ROBBINS SPORTS SURFACES www.robbinsfloor.com						
Bio-Cushion Classic	TESTED					
Bio-Star[5]	CERTIFIED					

FOOTNOTES: 1) Surface Friction Criteria for DIN is not included in this table, as it is a floor finish criteria achievable with any of these floors. 2) A durability, not performance criteria. 3) System installed at Mirabelli. 4) System installed at Centennial Hills 5) May not be available in 1st Grade.

09900 Painting

Work Scope. Specify that all exterior pad mounted electrical cabinets and mechanical equipment (including HVAC units if visible to the public from ANY location) be painted to coordinate with the color scheme of the project. Factory finish gray is not an acceptable final finish.

Quality Standard. Specify high quality paint, since the City will be maintaining the facility indefinitely.

Solids. Specify a minimum of 32% solids by volume (not weight).

Vehicle.
Exterior: Specify only 100% Acrylic topcoats, no substitutes (not vinyl acrylic, co-polymer).
Interior: Specify as appropriate to usage.

Pigment Load. Specify Tio2 – Titanium Dioxide.

Sheen. Specify by percentage reflectance, not by label such as "semi-gloss".

Ferrous Metals. Specify an oil based (alkyd) primer on all ferrous metals with two coats of 100% Acrylic, interior and exterior.

Handrails. Specify a mastic epoxy primer with two coats of aliphatic polyurethane, interior and exterior, to all handrails and similar heavy wear painted surfaces.

Occupied Projects and VOC. For remodels where the occupants will be remaining during construction, only specify water-based products with low VOC. Otherwise, the City does not require low VOC materials, specify the best quality for the use.

Swimming Pools and Splash Pads. Aquatic facility paint specified must be NSF approved for use and application.

Spare Materials. Specify one (no more, no less) quart of each color of water base paint be provided for the owner's use; do not provide spare materials of any oil based paints used, since the owner has no way to properly store them.

Minimum Dry Film Thickness. Specify minimum DFT for each paint system and coat. The following are minimum required thicknesses and need to be increased in the consultant's paint specification to meet standard specification text and manufacturer's recommendation.

Exterior.

Concrete Block, Brick Masonry, Concrete, Plaster (Stucco) - 2 or 3 Coat System over Block Filler
Filler Coat, minimum 7.0 mil DFT
Second and Third Coat, 1.5 mils minimum each DFT
-OR-
Elastomeric Smooth Second and Third Coat: 12 mils minimum total DFT
Elastomeric Medium or textured Second and Third coat: 18 mils minimum total DFT

Wood, Hardboard, Siding - 3 Coat System
Primer Coat (Acrylic Epoxy Ester): 1.5 mils minimum each DFT
Second and Third Coat: 1.5 mils minimum each DFT

Ferrous and Nonferrous Metal - 3 Coat System - Alkyd Primer and Acrylic Finish Coats
Primer Coat: 1.5 mils minimum each DFT.

Second and Third Coat: 1.5 mils minimum each DFT

Around swimming pools, pool equipment rooms, pool chemical storage areas, and similar harsh chemical environments, specify the epoxy systems shown below for "Interior - Wet Areas – Ferrous Metal and Non-Ferrous Metal".

Metal Doors - 3 Coat System (Shop Primed)
Spot Prime: 1.5 mils minimum each DFT, Exterior Alkyd Metal Primer
First Coat: 2-3 mils minimum each DFT, Universal Primer
Second Coat: 2-3 mils minimum each DFT, High Solids Polyurethane

Hand rails: 3 Coat System
Primer Coat: Mastic Epoxy Primer, 4-5 mils minimum DFT
Second and Third Coat: Aliphatic Polyurethane, 3-5 mils minimum each DFT

Gypsum Board: 3 Coat System
Acrylic System:
Primer Coat: 1.8 mils minimum each DFT
Second and Third Coat: 1.5 mils minimum each DFT
-OR-
Vinyl Acrylic System:
Primer Coat: 2.0 mils minimum each DFT, Exterior Acrylic Primer/Sealer/Stain Killer
Second and Third Coat: 1.6 mils minimum each DFT, Exterior Acrylic Copolymer Flat Finish

Interior.

Concrete, Cement Plaster, or Masonry - 3 Coat System
Primer Coat: 2.1 mils minimum each DFT
Second and Third Coat 1.5 mils minimum each DFT
-OR-
Low VOC / Low Odor
First Coat: 1.7 mils minimum each DFT
Second and Third Coat 1.2 mils minimum each DFT:

Gypsum Board - 3 Coat System
Primer Coat: 1 mils minimum each DFT
Second and Third Coat 1.3 mils minimum each DFT
-OR-
Low VOC / Low Odor
Primer Coat: 1.7 mils minimum each DFT
Second and Third Coat 1.2 mils minimum each DFT

Acoustical Ceilings - 1 coat system
First Coat: 1.7 mils minimum each DFT

Wood - 3 Coat System – Acrylic Primer and Acrylic Finish
Primer Coat: 1.5 mils minimum each DFT
Second and Third Coat 1.5 mils minimum each DFT

Ferrous and Nonferrous Metal - 3 Coat System
Same as Exterior Metal (Alkyd Primer)

Wet Areas –Concrete Block and Brick Masonry — Epoxy System
Filler Coat: 7.0 mils minimum each DFT, Acrylic Block Filler
Second and Third Coat: 4-5 mils minimum each DFT, Mastic Epoxy

Wet Areas –Concrete, Stucco & Plaster— Epoxy System
Primer Coat: 2.0 mils minimum each DFT, Epoxy Acrylic Concrete Sealer
Second and Third Coat: 4-5 mils minimum each DFT, Mastic Epoxy

Wet Areas – Ferrous Metal — Epoxy System
Ferrous metal - above grade

Prep - Clean with Phosphoric Acid Metal Preparation
SP-3 Hand tool Clean to remove all scale, weld slag and foreign debris.

Primer Coat: 3-4 mils minimum each DFT, 70% minimum solids Zinc Epoxy Primer
Second and Third Coat: 4-5 mils minimum each DFT,
80% minimum solids Mastic Epoxy

Ferrous metal - below grade or through concrete

Prep - Sand blast new steel to SP-6 standard

Primer Coat: 4-6 mils minimum each DFT, 60% minimum solids Epoxy Primer
Second and Third Coat: 8-12 mils minimum each DFT, 100% solids Epoxy

Cure for 4 days before exposed to water environment.

Wet Areas – Non-Ferrous Metal — Epoxy System
Prep Coat, Metal Phosphorizer
Second and Third Coat: 4-5 mils minimum each DFT, Mastic Epoxy.

Concrete Floors
1 Coat clear polysiloxane concrete penetrating sealer.

10160 Toilet Compartments

Unless matching existing materials, use:

- Floor supported with headrail mounting or
- Floor to ceiling mounting,

- Solid polymer (high-density polyethylene with homogenous color throughout), or
- Baked enamel painted steel partitions

as appropriate to usage and project budget. Park restrooms utilize the city's standard custom design.

Consider extra deep compartment stalls in senior facilities.

10350 Flagpoles

Design consultants shall not suggest or recommend including flagpoles in any facility designs. The City Project Manager will inform the consultant if flagpoles are to be included.

When flagpoles are included in the design:

Specify aluminum, stainless steel aircraft cable internal halyard with flush access door and cylinder lock that permits locking of the flag in any position, winch operated, revolving truck assembly, with flash collar,

> Equal to the features, materials, and warranty of the Deluxe IH Series, Internal Flagpole System with "M" type winch, all stainless steel cable available from Anchor Flag, Inc., 2044 Hwy 9 W. Longs, South Carolina 29568, 800-637-3002, www.anchorflagandflagpole.com.

Flags must be properly lighted since flags will not be lowered at night. Comply with "The Flag Code of The United States-Public Law 94-344 July 7, 1976", http://www.bcpl.net/%7Eetowner/flagcode.html.

If lights are ground mounted, they must be low temperature, vandal resistant and located outside of sidewalks, concrete flatwork, and pedestrian areas. Mounting lights on freestanding, parking lot, or general lighting poles is acceptable if glare and light spill into residential areas is limited.

The City does not have a standard pole height or flag size.

10426 Signage & Graphics

General Information. This section includes information pertaining to Building and Site signage standards and code requirements. The consultant shall provide complete project documents necessary for the project to open with a full complement of signs including on/off site and building signage location plans, signage details, and specifications. The consultant shall review and utilize the standard sign details provided in the OAS design standards. The quantity and location to install each of the signs is described in the most specific section of the design standards and/or in this section.

If these standards do not contain a standard sign necessary for a project contact OAS to coordinate the design and the text for the sign. Signage for historic buildings will be determined on a case by case basis, with many if not all of these design standards being modified as appropriate and required.

Manufacturer and contractor logos or advertising plates are not allowed on any signs or construction features including chain-link fences, sidewalks, manufactured buildings, shade structures, etc.

Reference additional signage requirements in the following sections:

01030 Accessibility
01050 Park Design
02882 Recreational Facilities & Playground Equipment
02870 Site Furnishings
02875 Site Shelters
02882 Recreational Facilities & Playground Equipment, Dog Parks, Skate Parks
13300 Splash Pad Equipment
13910 Basic Fire Suppression Materials & Methods
16001 Design Information - Electrical
16520 Exterior Lighting

Dedication Plaque. All major buildings open to the public and all parks require a dedication plaque. Building plaques are generally located around the main entry, interior or exterior. Park plaques are monument mounted. Verify locations with the City and whether a plaque is required if in doubt.

See the corresponding drawing file showing the dedication plaque. The same plaque is used for interior and exterior use, and for buildings and park monuments. \\EMPEROR\Intranet\PublicWorks\OAS_Intranet\DesignStandardsManual\Drawings\10-Specialties\Dedication Plaque\ST10426-01.dwgCoordinate the names of the public officials, project name, and dedication date to be shown on the plaque with the City. The City is responsible to coordinate approvals and acquire the plaque. Variations from the standard need to be approved by the City Manager. Note on the drawings that the plaque will be furnished by the City and installed by contractor.

Plaque Monument. To be utilized when placing a plaque in a park or other open space project that does not contain a significant building. Reference the corresponding concrete monument drawing file, which shall be included in the construction documents. The concrete monument shall be located near the vehicular and/or pedestrian entrance to the site in a planting area (not grass). The concrete monument is to be furnished and installed by the contractor. Any revisions made to the design of the concrete monument requires prior approval from the City Manager's Office.

Ordering. The plaque will not be ordered until after the grand opening ceremony for the project. The fabrication and delivery of the plaque takes approximately 6 weeks from the time a P.O. number is issued to the manufacturer. The manufacturer is A.R.K. Ramos, contact person: David Wommer, phone (800) 725-7266, fax (405) 232-8516.

Site Signage.

Park Monument Signs. Precast concrete, not lighted, furnished and installed by the City upon completion of the project. Indicate the signage location(s) on the drawings. Signs may be one or two sided, base size is 2'-0" x 10"-0". City contact: John Black at phone no. 229-6988 in the Department of Field Operations (Parks / Open Spaces Division). These signs may also be used to identify building projects as appropriate.

Off-Site and On-Site (Vehicular Signage). Aluminum signs with applied Silk-screen text and graphics. Signs should be post mounted; mounting on light poles is discouraged but allowed where additional posts would be impractical or hazardous such as in parking lots. Comply with the Manual on Uniform Traffic Control Devices and all codes/regulations.

Handicapped Parking Signage. Ref. ADAAG Standards and N.R.S. in regard to handicap parking and side-lift vehicle parking requirements. Reference Section 01030 Accessibility for further information.

On-Site Regulatory-Informational-Warning Signage (Non-vehicular Signage). Signs may be mounted on posts or fences, although mounting on light poles is discouraged but allowed where additional posts would be impractical or hazardous such as in soccer field light poles areas. Standard drawings of the signs and mounting instructions are located in this and other sections of the Design Standards.

Signage Standards (sign and post specifications / mounting requirements).

Colors (Signs).

- Regulatory and Park Activity Signs / Identification Signs: White background with Black text.
- Warning Signs: Red background with White text. (Pantone Red – 187C)
- Handicap Parking Signs: Blue background with White text. (Pantone Blue – 294C)

Note: Any exceptions to these colors will be shown in the section specific to the sign.

Sign Specifications.

On-Site Regulatory-Informational-Warning Signage (Non-vehicular Signage).

- Aluminum signs (thickness .080")
- Engineered White Sheeting Background
- Silk-screen applied color over background material. (Inks shall have a light fastness rating of 7-8 on the din 16525 (Wool Scale) or equivalent industry standard, and must be able to withstand 375 degrees Fahrenheit (190 degrees Celsius) without noticeable change of pigmentation. Inks shall be formulated using a computer colorimetry system and shall be matched with a tolerance of +/- 0.1 grammes.)
- Provide UV inhibitors in color.
- Provide 3M Scotchlite Protective Overlay Film Series 1150
- Reference sign drawings for hole locations.

Off-Site and On-Site (Vehicular Signage).

- Aluminum signs (thickness .080")
- High Intensity grade, or equal background (encapsulated lens retro-reflective sheeting) *(Class 4 sheeting shall meet the requirements of FP-96, Section 718, for Type III sheeting.)*
- Silk-screen applied color over background material. (Inks shall have a light fastness rating of 7-8 on the din 16525 (Wool Scale) or equivalent industry standard, and must be able to withstand 375 degrees Fahrenheit (190 degrees Celsius) without noticeable change of pigmentation. Inks shall be formulated using a computer colorimetry system and shall be matched with a tolerance of +/- 0.1 grammes.)
- Provide UV inhibitors in color.
- Provide 3M Scotchlite Protective Overlay Film Series 1150.

- Reference sign drawings for hole locations.

Post / Sign Attachment Specifications.

- 2" Galvanized post (box member) w/ continuous perforated holes on all four sides.
- Attach anchor and sleeve together prior to driving into ground. Leave at least one hole, but no more than two, above ground or above sidewalk.
- For sidewalk installation, drill sidewalk with a 3" hole, the center to be 6" from the back of sidewalk.
- Attach post to anchoring system by using at least two 3/8" diameter. Drive rivets.
- Provide 4" minimum lap between post and the anchor/sleeve assembly.
- Attach signs with (2) - #10 x ¾" self-tapping vandal proof screws (screws color to match sign color).

Note: Reference sign post installation detail drawing for further information pertaining to length of anchor and sleeve.

Sign Mounting Standards.

On-Site Regulatory-Informational-Warning Signage (Non-vehicular Signage).

- Mounting Height shall be between 40" min to bottom of sign and 70" maximum to top of sign. (unless noted otherwise).
- More than one sign is allowed on a single post.
- Signs shall be installed on the same face or on the opposite side of the post only. If signs are mounted on the opposite side of the post they shall be mounted at the same height.
- No signs shall be installed at a right angle (perpendicular) to another sign on the same post.
- Single post mounting is required unless noted otherwise.
- Post height shall not extend above the top of signs.
- Post mounted signs shall be located in landscaped areas (decomposed granite vs. turf) if possible.

Off-Site and On-Site (Vehicular Signs).

- For mounting Height and additional requirements reference the standards in the Manual on Uniform Traffic Control Devices (MUTCD).

Note: Reference Accessibility Section 01030 for further information pertaining to mounting standards for handicap parking.

Light Pole Attachment (only when necessary).

- Do not drill through or into light poles.
- Provide galvanized straps to secure signs to poles.

Building Signage – Exterior.

Park Restroom Building Men's and Women's Room Signs. A.R.K. Ramos, model no. E-94 at the women's room and F-94 at the men's rooms. The sign field texture to be pebble. Color to be selected per project by the consultant to coordinate with the project color scheme.

Building Name. The following types of buildings will be given name identification on the exterior of the building located in proximity to the main entrance; Community centers (i.e. senior centers, auditoriums/theatres, track break buildings, etc.), Recreation centers, Fire Stations, Government (Public) Buildings. Do not provide Building Name signage on park restrooms or similar accessory buildings. The official name of the building typically will not be known until the grand opening. Therefore, the design consultant shall provide a location only; on the building for a proposed future building name (architectural project manager to coordinate with city department official name). Appropriate lighting and mounting requirements will be included in the contract documents but the signage will typically be by an outside

vendor after completion of the construction.

Individual Cast Metal Letters: A.R.K. Ramos, material: Bronze, Finish: Dark Bronze Anodized, Text Font: Helvetica Medium, Height: varies, Depth: varies (dependant on height), Edges: square.

Building Address. As required by local code including park restrooms if required.

Individual Cast Metal Numbers: A.R.K. Ramos, material: Bronze, Finish: Dark Bronze Anodized, Text Font: Helvetica Medium, Height: varies, Depth: varies (dependant on height), Edges: square.

The following code requirements are provided as a reference. Verify all requirements with the Department of Building and Safety.

Address display requirements (Commercial Building) Per. Ord. No. 3744 10/93:

- Address must be displayed on the freestanding sign, if there is one on the lot, and on at least one location on the building.
- Place address so it is visible from the street in both directions.
- Contrast the color of address and unit numbers with the color of the background.
- Illuminate the address and unit numbers directly or indirectly so it is visible at night.
- Place address clear of landscaping.
- Address must be displayed at each entrance.

Note: Reference Ordinance No. 3744 (figure 10) for additional information/clarification regarding size requirements and location requirements.

Address display requirements (Commercial Complex) Per. Ord. No. 3744 10/93:

- General address or address range must be displayed on the freestanding sign, if there is one on the lot, and on at least one location on each building.
- Place address so it is visible from the street in both directions.
- Contrast the color of address and unit numbers with the color of the background.
- Illuminate the address and unit numbers directly or indirectly so they are visible at night.
- Place address and unit numbers clear of landscaping.
- Unit address displays must be at each entrance.

Note: Reference Ordinance No. 3744 (figure 11) for additional information/clarification regarding size requirements and location requirements.

Building Signage – Interior.

Room and Informational Signage. The following is the information for city standard signage. The Architectural Project Manager for each project shall be responsible to decide the appropriate signage for those signs that are not required but may be desired.

Innerface Sign Systems (module signs) are the standard for the following types of signage:

- Main Directories
- Directional Signs (raised letters w/ Braille)
- Room Signage
- Restroom Signage (raised letters w/ Braille), *Required*
- Operations rooms, i.e. janitors closet, mechanical rooms, etc. (raised letters w/ Braille), *Required*
- Stairways per ADA/ANSI and UBC, *Required*

Note: No equals are known and no substitutions will be allowed.

Note: Choice of module for each type of signs shall be selected in regard to the amount of text and size of sign required.

All required signage must comply with ADA/ANSI requirements.

Color. City Hall complex standard color is Innerface color 5. All other buildings can have the color selected to match the color scheme for the particular building.

Innerface Sign Systems, Inc., Contact person: Anita Chisolm, Phone no: (800) 445-4796 (ext. 115) voice mail extension 9215, Fax no: (770) 564-0362.
Local rep. is Janell Prazak (800) 445-4796 (Los Angeles).

End of Document

10553 Rapid Entry Key Boxes

Buildings containing fire suppression or fire alarm systems are required to be provided with a Rapid Entry Key Box (Knox Box). Exact locations and determinations must be coordinated with the City's Fire Department Prevention Office for each such project. Additionally, in circumstances where building electrical main disconnect gear is located within a building, the CLV Building Department requires the exterior door giving direct access to the disconnect gear to be provided with a rapid entry key box.

Rapid entry key boxes by the Knox Company, only, are to be installed (www.knoxbox.com) (800-552-5669) (fax: 623-687-2299). Substitutions or specifying other products are not allowed.

Typically, specify the 3200 Series product, RECESSED. Specify the 4400 Series Vault product only if a situation exists where more than eight keys will be necessary to be placed in the box to allow emergency access to the facility (rare cases), or when it is desired to have dual locks installed on the box (special circumstance only, that would be determined by the Marshal's Division and the facility's occupying department through the Architectural Project Manager).

Specify the manufacturer's reflective labels for installation on the exterior face of each building exterior door controlled by a key maintained in the Rapid Entry Key Box.

Specify recessed mounting kits where appropriate for the type of supporting construction.

Tamper switches are not typically required for the Rapid Entry Key Boxes. The Architectural Project Manager will advise the consultant if a particular project requires this optional security feature. If so instructed, specify the manufacturer's UL listed tamper switch and include power requirements per the manufacturer's printed instructions in the construction documents.

Finishes are at the consultant's discretion from the manufacturer's standard polyester powder coating (black, dark bronze or aluminum), or where extreme moisture or humid conditions will be encountered, the manufacturer's optional aluminization shall be specified.

Indicate location(s) as approved by the Fire Department and mounting heights on construction drawings. Mounting and access shall be in compliance with the Americans With Disabilities Act referenced guidelines to allow inspectors and other non-emergency personnel the ability to inspect and service the boxes and the installation shall be RECESSED unless specifically approved otherwise by both the Architectural Project Manager and the Fire Department.

Other Standards. This standard is a companion to other standards describing features of fire detection and suppression systems and electrical systems. This design standard is not intended to duplicate or replace adopted code requirements.

Related City of Las Vegas design standards include:

- 13851 – Fire Alarm
- 13910 – Basic Fire Suppression Materials and Methods
- 16001 – Design Information – Electrical
- 16510 – Interior Lighting (applies when key switches are used to control lighting)

Applicable codes and national standards to this City of Las Vegas design standard include, but are not limited to:

- Uniform Fire Code, NFPA 1 2003 Ed., Primarily Chapter 13. (effective date 5-19-04)
- City of Las Vegas Fire Code Amendments, 2003 Ed.

10800 Toilet Accessories

Facilities Restrooms. (City employee buildings, leisure centers, fire stations, etc.)

Public facilities, which are less controlled such as leisure centers will have more of a need to have the recess mounted accessories for ease of use and maintenance reasons.

Employee buildings, fire stations, etc. we encourage the use of surface mounted accessories.

Approved Manufacturers. Bobrick, Bradley Corp., American Specialties Inc., or approved equal.

Note: All listed accessories manufactured by Bobrick are the Contura Series unless noted otherwise.

Paper Towel Dispenser and Waste Receptacle (surface mounted). Bobrick, Model No: B-3949 (mounting height may vary due to individual design constraints).

Paper Towel Dispenser and Waste Receptacle (recess mounted). Bobrick, Model No: B-43944 (mounting height may vary due to individual design constraints).

Paper Towel Dispenser (surface mounted). Bobrick, Model No: B-4262 (mounting height may vary due to individual design constraints).

Paper Towel Dispenser (recess mounted). Bobrick, Model No: B-4362 (mounting height may vary due to individual design constraints).

Waste Receptacle (surface mounted). Bobrick, Model No: B-277 (mounting height may vary due to individual design constraints).

Waste Receptable (recess mounted). Bobrick Model No: B-43644 (mounting height may vary due to individual design constraints).

Wall Mounted Soap Dispenser (surface mounted). Bobrick, Model No: B-4112 (mounting height may vary due to individual design constraints).

In-counter Soap Dispenser. Bobrick, Model No: B-822 *(Public Facilities Only, e.g. Leisure Centers)*

Seat Cover Dispenser (surface mounted). Bobrick, Model No: B-4221 (mounting height may vary due to individual design constraints).

Toilet Tissue Dispenser (surface mounted). Bobrick, Model No: B-4288 (mounting height shall be 24" A.F.F. to centerline of unit per ADA requirements).

Toilet Tissue Dispenser (recess mounted). Bobrick, Model No: B-3013 (mounting height shall be 24" A.F.F. to centerline of unit per ADA requirements).

Sanitary Napkin Dispenser / Tampon Vendor (surface mounted). Bobrick, Model No: B-435009 (mounting height may vary due to individual design constraints).

Sanitary Napkin Disposal (surface mounted). Bobrick, Model No: B-270 (mounting height may vary due to individual design constraints).

Grab Bars. Bobrick, Model No: B-6206 (36" and 42" lengths)(mounting height shall be 33" A.F.F. to centerline of grab bar).

Protective Drain Pipe Covers (flexible glove type cover w/ Velcro closure). Plumberex

Park Restrooms.

Grab Bars. Bobrick, Model No: B-6206 (36" and 42" lengths)(mounting height shall be 33" A.F.F. to centerline of grab bar).

Toilet Tissue Dispenser (surface mounted). Royce Rolls Ringer Company, Model No: TP-2 - 2 roll (mounting height shall be 24" A.F.F. to centerline of unit per ADA requirements).

~~Stainless Steel Mirror. Bobrick, Model No: B-0446 (mounting bottom of reflective surface @ 38" A.F.F. @ handicap accessible lavatory).~~ Do not install mirrors in park restrooms.

Hand Dryer. Fastaire, Model No: HD03 (mounting height may vary due to individual design constraints).

Concession Rooms.

Paper Towel Dispenser (surface mounted). Bobrick, Model No: B-4262 (mounting height may vary due to individual design constraints).

Wall Mounted Soap Dispenser (surface mounted). Bobrick, Model No: B-4112 (mounting height may vary due to individual design constraints).

11001 Design Information – Equipment

See Section 01060 Architectural Design for kitchen equipment requirements.

Safes

Provide one safe in facilities that handle cash transactions on site.

Safe Location: Secure location out of public view, preferable within a staff office separate closet with door.

Safe Type: Above ground with a depository drawer (drop safe type); drop compartment can be either front loading or top loading with a rotary drop compartment; large enough to store cash trays.

Lock Type: Specify a digital or electronic lock to allow for multiple combination changes. Do not order a dial operated combination lock device.

Manufacturers:

- Brown Safe Mfg. Single door Depository Safe Model # C2214 RHF with Electronic Lock

or

- Adesco Safe Company Model# PD 2214 with digital lock.

Installation: Bolt down. Order safe with predrilled floor mounting plate.

Cash Drawers

Provide one or more built-in cash drawers at reception desks in facilities conducting cash transactions. Design casework openings to fit the drawer dimensions noted herein, normally one per workstation.

Manufacturer: Model SLD1751675, by Indiana Cash Drawer Company, 17.5" long x 16.75" wide x 4.125" high, http://www.icdpos.com/electron.stm or approved equal.

Alarm Switches: Each cash drawer requires a switch activated by the removal of the drawer and a distress alarm push button adjacent to the drawer, connected to the facility's security alarm system. The switches and wiring will normally be provided by the City's contracted alarm company; the construction contractor normally provides conduit for the wire, unless wireless. Consultant shall verify requirements with City for each facility.

If the facility is within the City Hall campus, the alarm switches connect to the local phone board for direct connection to the local Detention and Enforcement dispatch office. Reference Section 13700 Security Access and Surveillance for more information.

12500 Furniture

Also reference:
- Division 1, Section 01062 for the design of prototype workstations for various job classifications.
- "Modular Furniture Requests Procedure" posted on the City Intranet.

Systems furniture and private office furniture for each project are to be programmed and laid out schematically by the prime consultant. The City of Las Vegas, Architectural Services staff will review the design to assure that the spaces designed for each person will meet their needs.

Modular Furniture.

Manufacturer.
Haworth, Inc.
One Haworth Center
Holland, Michigan 49423-9576
Phone No: (800) 344-2600

Distributer / Installer.
Facilitec
7350 S. Industrial #301
Las Vegas, NV 89139
Phone No: (702) 795-8833 Fax No: (702) 795-8838

City Hall Campus Standard modular furniture colors.

The following are standard colors and finishes used in the City Hall Campus. The use of these standard colors should be used if possible in other city facilities for continuity, reuse and maintenance purposes.

Standard Panel Fabric Color: Mushroom, FE-A4.
Standard Panel Trim and shelving finish, Gray tone.

13152 Swimming Pools & Equipment

Designer. An experienced and licensed aquatic pool designer, acceptable to the City, working under the prime consultant, must complete the pool design and specifications. Performance specifications will not be used. Show a complete commercial design. Acceptable designers include, but are not limited to:

Randy Mendioroz
Aquatic Design Group
1950 Kellog Ave.
Carlsbad, CA 92008
rmendioroz@aquaticdesigngroup.com
(760) 438-8400 TEL
(760) 438-5251 FAX

(not utilized to date)
Counsilman Hunsaker
St. Louis 314-894-1245
Los Angeles 310-486-2081
www.chh2o.com

Contractors. A pool contractor who has been pre-qualified by the City must perform the pool construction, and the general contractor must list the pool contractor's name on his bid documents. All of the work in sections 13150 through 13159 is to be the responsibility of one experienced swimming pool contractor primarily engaged in the construction of commercial public-use pools deriving more than 50% of their annual revenue from public-use swimming pool construction.

Contractors who want to be on the qualified list must provide adequate evidence that they have successfully completed the construction of three (3) similar commercial pool projects, and listed in the specifications or a minimum of 10 day prior to bid opening. The City shall be the sole judge of whether the previous experience was successful.

Contractors who have been previously pre-qualified and should be listed in the specifications:

Baja Commercial Inc., Las Vegas, NV, (702) 732-0502
California Commercial Pools, Glendora, CA, (909) 394-1280
Casa Grande Pools, Las Vegas, NV, (702) 433-1066
Mission Pools, Escondido, CA, (760) 743-2605
Wescon, Inc., Albuquerque, NM, (505) 345-2511
Western Water Features, El Dorado Hills, CA

Codes and Regulations. Comply with all codes and regulations including:

Clark County Health District. Consultant must submit drawings to the Clark County Health District (CCHD) pool desk for plan check at their offices on Shadow Lane. CCHD approval is required before a building permit can be issued through Building and Safety.

Nevada Administrative Code (NAC) Chapter 444, Public Bathing Places, Public Spas.

Southern Nevada Pool Code as adopted by the City of Las Vegas.

National Sanitation Foundation (NSF) Standard 14. Box 1468, Ann Arbor, Michigan 48106.

American Disability Act and ANSI 117.1, reference "Section 01030 Accessibility" of these standards. Provide a removable lift in the deck accessible to 3'-6" deep water as the primary means. Although the program design may require a zero-grade sloped pool entry, this type of entry does not meet ADA access

requirements unless handrails are provided on both sides similar to a standard handicap ramp design, which is not the city preferred means for primary entry.

Parking Spaces. Reference "Section 01041 Parking Facilities Design" of these Standards for the required number of parking spaces. Note: Spaces are likely to be required in excess of the minimum code requirements.

Bathhouse Design and Fixtures.

Neighborhood Pools. Reference the prototype design first built at Baker Park Pool and refined at Freedom Park (by Westar Architectural Group.) Since these designs were completed, the Health District has relaxed their stance on mandatory entry through the locker rooms, so a combined entry to either the locker rooms or directly to the pool area is now preferred. These designs may not be air conditioned if funding doesn't allow (requires cash transactions if the admissions desk area is not air conditioned, instead of by computer) and do not require an administrative office. These facilities draw from 1 to 2 miles and are appropriate for neighborhoods where transportation to larger facilities is limited.

Regional Multi-pool Multi-purpose Water Parks. The bathhouses for these facilities will generally be air conditioned and contain a lobby and administrative office area. The locker rooms may or may not be air conditioned depending on budget. Reference the Centennial Hills Leisure Center design as an example. These facilities draw from several miles and should be located for ease of transportation (private and public).

Indoor Pools and Outdoor Pools with Locker Rooms included in Larger Recreation Buildings. These locker room and restroom facilities will generally be air conditioned, with the overall building. Reference Muni-Pool and Centennial Hills indoor pool as examples.

General. Size will vary depending on the fixture count requirement. Bathing and toilet facilities are required for the public in all pools facilities. Access to toilet facilities from outside of the pool area may or may not be required in the program; confirm with the OAS project manager.

The number of fixtures is determined based on Pool Capacity NAC.444.210, by the Clark County Health Department, and the occupancy load in IBC as enforced by Building and Safety. The calculation methods differ and the most restrictive applies.

Provide fixture type and manufacture the same as for Unsupervised Public Restrooms in the 15410 Plumbing Fixtures section of these Design Standards for freestanding open-air bathhouses. Alternately, for bathhouse facilities that are part of a conditioned air, supervised larger facility, the fixtures may be the same as those specified for Supervised Public Restrooms.

Gas Heaters – Regulator Design. Do not suggest the installation of heaters on swimming pools. They are relatively cheap to install but very expensive to run. The City will program which pools receive heaters in their project program. The designer will provide space and piping for future heaters in the equipment area even when heaters are not included in the original program.

Refer to "Section 02500 Utility Meters" of these standards, when specifying Lochinvar heaters, preferred by the City of Las Vegas. Specifying any other unit must be approved by the City of Las Vegas.

Condenser Heat Recovery System. Using recovered heat from bathhouse, and or pool building to heat the water should be used when feasible.

Solar Heaters. The use of solar heaters is required when the City requires heaters. Even when heaters are not required in the project program, provisions should be made in the structural calculations, roof area and pipe sleeving to allow for future retrofitting of a solar system and shown dotted as future on the working drawings. The payback on solar systems in gas savings is as little as 3 years.

Pool Deck. Pool decks shall be 5" minimum thick unreinforced concrete, unless the consultant can provide sufficient justification for specifying a different construction or for including reinforcing, due to soil or other special conditions. The City has experienced good results from such properly specified, compacted and constructed unreinforced pool decks.

Provide generous expansion and shrinkage control joints to eliminate initial shrinkage cracks, with joint intersections and panel corners at 90 degree or more, 16 square feet maximum per panel.

Avoid designs that require vehicular traffic on the pool deck area for deck lighting maintenance, chemical deliveries and emergency vehicles.

Specify a sealed medium broom finish concrete deck, natural color. Concrete coatings or topping shall not be used on the deck. Specify a penetrating sealer/hardener which may also serve as a curing agent. Other than the use of such a multipurpose penetrating sealer/hardener/curing agent, do not allow any curing agents to be used on the concrete regardless of what the manufacturer of the materials represents for compatibility between the curing agent and the penetrating sealer. The city has experienced compatibility problems on past projects. If the penetrating sealer is to be applied some time after the concrete has hardened, require the contractor to cure the slab by covering with white poly; see the concrete section of these standards for requirements.

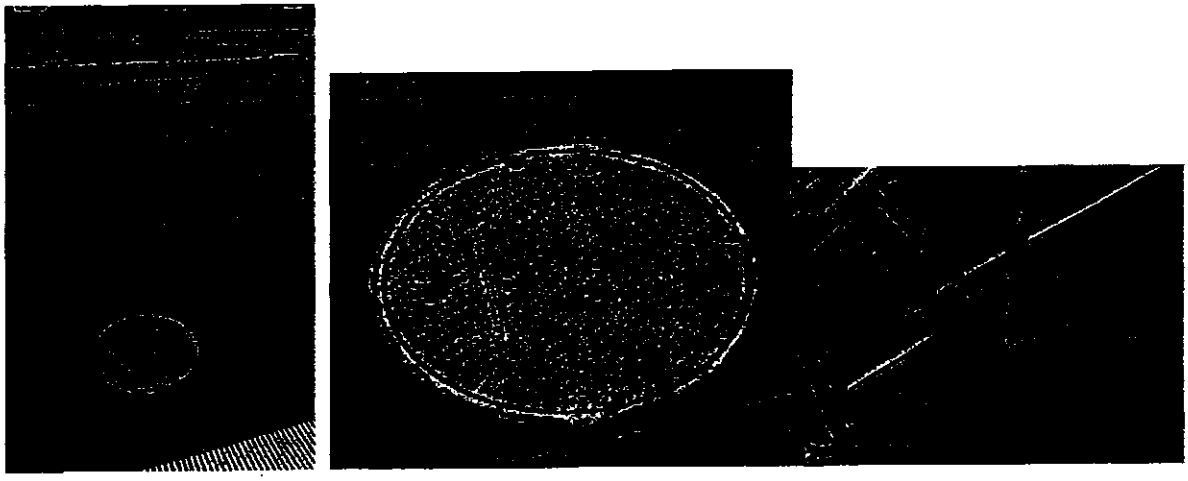
Grates, deck drain covers, etc. on the deck are to be light in color to reduce heat and of a material that will not corrode in a chlorine environment.

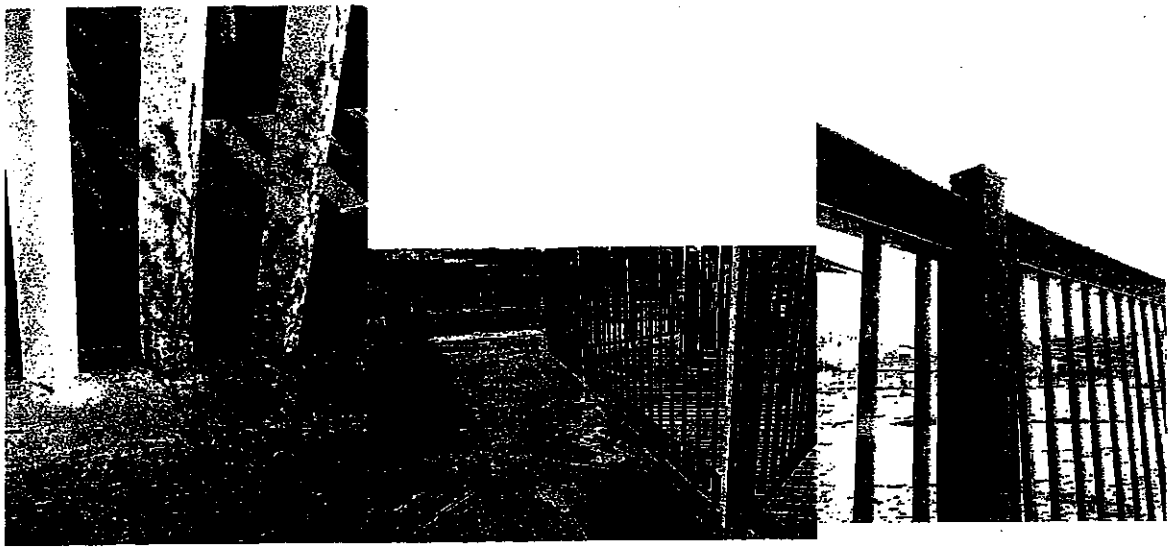
Deck Drains. Avoid deck designs that require internal drains since there is no convenient way to get rid of the water. Daylighting provides a concentrated nuisance wet area unacceptable to city maintenance, city sewer won't accept it (unfiltered rain water), storm water won't take it either (apparently because of the chlorine's affect on the Las Vegas Wash), a dry well may not be able to handle the amount of run off during cleaning and may clog over time. Sheet draining the deck area to the adjacent landscape area is acceptable.

Metals. Ferrous metals should not be used within 50 feet of the pool, pool equipment or chemical storage area. If they must be used within the pool area, they cannot be located on the deck, but must be placed on a concrete curb, in a landscape area or otherwise separated from the deck surface to slow the accelerated rusting process. This includes valve covers, gate posts, light posts, shade structure posts, no climb fence, door jambs, electrical conduits/boxes, handrail supports, etc.

For metal guard fencing required around slides or similar areas within pool facilities, specify all aluminum with stainless steel hardware and mount on a concrete curb.

Paint. Regardless of the metal used, around swimming pools, pool equipment rooms, pool chemical storage areas, and similar harsh chemical environments, specify the epoxy systems shown in Section 09900 Painting for "Interior - Wet Areas – Ferrous Metal and Non-Ferrous Metal", unless #316 stainless steel.





Gutter Systems.

Rim flow* (deck level) style gutter design with a perimeter gutter and surge tank system. Water level is flush with top of deck edge

Deep gutter with cantilevered deck, with 12" +/- between top of deck edge and water surface.

Deck edge.

Cast Coping Stones

Fast Lane Coping
4801 West End Rd
Arcata, CA 95221
(800) 835-1660

Kinematics, Ltd.
Port Jefferson Station, NY
(631) 928-8420

PVC Edge coping and gutter grating (no known equal) This product is in use at Municipal Pool.

Grate Technology
3550 Westview Drive, #101
Naples, FL 34104
http://www.gratetech.com/
Phone: 239.435.3700
Fax: 239.435.3708
ask@gratetech.com

Tile (no known equal)*

Dal Tile C701 bullnoze at pool edge
*Be careful with substitutions, we have experienced tile of similar shaped tiles that shattered when hit creating a cutting edge.

Competition Lanes. When the project program requires competition lanes, provide (seven) 7 ft wide, 25-yard lanes in small pools, and both 50 meter and 25 yard lanes in larger pools.

Starting block platforms are not to be used in less than 5'-6"of water depth.

Slides and Water Play Equipment. When approved by the City of Las Vegas, the consultant needs to take into account the additional water circulation requirement and increased filtration equipment to meet CCHD codes. Usually it requires a greater water exchange rate, a separate pump and additional filter capacity. Incorporate those costs into the initial design. Additional lifeguards are required and staff space required for slides (NAC. 444.250, 270 –276). Areas under water slides are to be fenced to prevent injuries due to headroom access.

The Health District codes generally require 2 staff to supervise; 1 at the top and another at the bottom. Additionally, the bottom of the slide should be clearly visible to the lifeguard at the top. This rule to apply to slides with running water. Codes also require a 4-hour turn over rate for facilities with these water features.

An ADA accessible route is not required to serve raised diving boards, platforms, or water slides but water play equipment must comply with the Access Board's Play Area Guidelines. Reference "Section 01030 Accessibility" of these standards.

Diving Boards. All diving wells will have a sufficient depth, width and headroom height to accommodate one meter and three meter diving boards per NAC.444.122.5. The number and height of boards will be on a project-by-project basis.

Preferred manufacturer Durafirm Stands #70231400 with double guard rails on two sides and Duraflex Aluminum Springboards by Adolph Kiefer & Associates, 800-323-4071, Fax 800-6547946, are the only approved manufacturer, no known equal.

Diving wells are to be 12' (twelve feet) minimum depth required for EMS training. This ends up to be 13 feet at the pool main drain.

Required Clearance for Diving Boards. NAC.444.122.5 of the Nevada Administrative Code (Diving Area and Equipment) reads: "At least 16 feet (4.9 meters) of unobstructed clearance must be provided above diving boards and platforms." Consultant shall verify compliance with latest edition of codes and regulations.

Life Guard Chairs. Specify portable 6 ft. high life guard chairs, KDI Paragon, ID#20301, phone number 916-452-5500, Fax 914-452-5326. KDI is the only approved manufacturer, no known equal.

Pool Equipment.

Provide Stantrol control system to match existing in the City of Las Vegas aquatic facilities, current models and options as requested by the city aquatic staff. Automatic backwash filtration system.

Provide U.S. Filter 20 sq. ft. tanks to match existing. No exceptions for City of Las Vegas projects. For other projects using automatic backwash systems, EPD filters are a close second with Stark filters a distant 3rd. Pentair and Neptune-Benson can only be used on manual backwash systems, which the City of Las Vegas does not us.

Bulk double wall tanks for chlorine and barrel storage of acid with containment area large enough to hold 1 ½ times the amount used on site.

Lochinvar heaters are preferred when heating of pool is requested by the OAS project manager. Refer to Design Standards 02500 Utility Meters. Teledyne Lars heaters not approved.

Rule of thumb in specifying heaters: If the Boiler (heater) is less than 1 mmBTU/hr, 30 ppm NOx and 100 ppm CO boiler is OK. If the boiler is between 1 to 2 mmBTU/hr, the boiler can be still at 30 ppm NOx. If the boiler is 2.0 mmBTU/hr or above, the boiler needs to be 20 ppm NOx and 50 ppm CO in stack emission. The exemption from air quality permit requirement only applies to 1 mmBTU/hr or less boilers and the facility must aggregate to less than 10 mmBTU/hr all together on the boilers. Verify Current requirements with the CLV Environmental Officer.

Vertical pump system. Easy access vertical strainer with visual inspection top. Provide a method to hoist up equipment and load on a service truck, preferably from a dock area.

Chemicals are to be stored in a covered outdoor area with corrosive resistant building materials subject to chemical vapors. Emergency eyewash and deluge systems are required in chemical and equipment areas.

Use separate systems when constructing multiple pools.

Pool pump pits must have an automatic system shut down switch if water approaches the pump motor(s). Pits to also have ladder into pit.

Backwash pits must be of adequate size to handle the surge and not overflow the sewer system. In case of overflow provide an overflow system to divert water away from pumps and electrical equipment.

Stainless steel used in and around pools must be #316 to prevent corrosion.

Electrical panels, disconnects and switchgear shall be easy access without leaning over equipment or wet

areas.

Underground pipe. Clark County Health allows Schedule 40 pipe. It must be stamped PW NC NSF approved, NSF Standard 14 & 61. If it is not clearly stamped on the pipe, it will be rejected. Clark County Health District requires inspection before covering the installation.

Lighting. Deck and underwater lights must be designed to provide visual access in water to a 13 ft. minimum depth and meet all CCHD and NAC requirements. See Division 16 of these Design Standards for additional lighting level requirements.

Overhead Pool and Deck
For indoor pools, specify Sterner lighting with 3M light tube system over water [(800) 328-7480] or alternate lighting fixtures (not mounted over the pool). Pay attention to the ease of re-lamping these fixtures.
For exterior pools, provide adequate deck lighting for night events and compliance with Division 16 lighting level standards.

Maintenance Pathway. An adequate pathway must be provided for maintaining pool deck area lighting on poles. The City TEFO section prefers to use a standard boom truck. The pathway may be inside or outside of the fence. A turf or DG surface pathway is acceptable; it does not need to be a concrete surface. It is desired that the boom truck is able to back up to the base of the pole from the lamp side. The boom truck is a double axle 35-foot long vehicle, 11 feet high with the boom in the travel position. Avoid planting major trees in near vicinity to the lights in order to reduce boom access.

Underwater
Fixtures may be metal halide or incandescent.

Incandescent, specify Amerlite with stainless steel ring, 500 watt, 120 volt, or approved equal. Verify cord length with designer for model number. Niches for this incandescent specify Pentair Large Stainless Steel Niches #78210600, 1 in. rear hub. This fixture uses a R40 Pool Flood Lamp. An equal fixture is Swimquip #5086-0050, #5068-12.

Metal Halide Swimming Pool Fixture, specify Hydrel 4428 Wet Niche, or approved equal. This fixture uses a 175 W, E-17 medium base, M-57 type, metal halide lamp.

Fencing. Provide a no-climb 6' fence around the pool area, placed on a concrete curb to protect the metal base from chorine. This fence is a Health Department requirement designed to keep children, non-swimmers from getting into the pool area unsupervised. The fence is not intended to be a security fence. If it is designed as a security fence, it still needs a 6' no climb feature.

Fencing should not obscure the view of law enforcement.

When possible, provide direct wind protection to keep wind off of the water surface. In a large surface area pool the water is cooled by evaporation and the wind makes it very difficult to heat the water.

Pool Gate - Design Criteria. See the City standard for gate design and layout. Consultant and CLV Project Manager to determine if polycarbonate panel will be on pool side or public side, depending upon site conditions.
Locking. Provide panic hardware with key cylinder on public side to be used by city personal only. Gate is to be used for public egress out from pool deck.
Signage. Provide lighted exterior exit sign w/ battery backup. All conduits to be concealed in frame.
Location. Locate a minimum of (1) gate per Southern Nevada Pool Code Requirements. Occupancy of pool and pool deck will determine number of gates required. Building and Safety has used 1/50 for pool area and 1/15 for deck area in the past, which creates a large number of required exits. Their exiting concern is not from fire but chemical spills.
Engineering. The CLV consultant's structural engineer shall be responsible to determine all steel member

sizing, footing sizing, etc. of the gate
Alarm: Gates shall activate an audible alarm when opened. All conduits to be concealed in frame.

Impellers. Specify an NSF tested and approved pump assembly containing an impeller made with whatever material was approved for the assembly.

In addition, provide one 316 stainless steel impeller as a spare for each pump assembly provided. Bronze is deteriorated by Las Vegas water and replacement of valves, impellers etc. is an ongoing process.

(Unfortunately, stainless steel impellers are not currently available in any NSF approved pump assemblies. The State of Nevada Health Department approves the stainless steel impellers on an NSF approved component basis, which many stainless steel impellers are. The LVVWD uses this State determination in using the stainless steel impellers in their pumps. Clark County Health District bases approval on the entire pump assembly being NSF approved, which to date, no pumps have been rated by NSF on an assembly basis with the stainless steel impellers.)

Timely Plastering of Swimming Pools. Pools that have been gunited or shotcreted can sit for many months (if not years) prior to plastering except that: 1) If the pool fills up with organics or other trash it needs to be properly cleaned prior to plastering (anything which prevents a proper bond between the plaster and the pool shell should be addressed); and 2) Large amounts of rain could saturate reinforcing steel within the gunite or shotcrete and cause it to bleed rust through the pool structure (more of an issue in an area like Seattle).

General requirements: Provide a dedicated phone line for remote chemical controller equipment.

Install adequate drain to grade hose bibs around pool deck to allow hosing down of deck.

Install four post or wall mounted standard GFI 110 volt outlets about the pool deck area.

No roof drains onto pool deck or pool area.

Fire exit plan should not lead into pool area from adjacent buildings. Pool entrances and exits should be isolated from other programming areas. Reference the pool gate section for issues.

Pump pits or any open pits must be fenced.

Pump lift systems are required, which can be attached to the building structure or free standing, see PoolPumpLift.JPG.

Provide shade structures separate from the main building.

Label all chemical lines and all other electrical and plumbing lines.

If a leak incurs in the pool and the contractor is responsible for the repair, the contractor shall hire a third party testing agency to verify the repair and investigate whether there is any remaining damage associated with the leak.

Note: These Design Standards are not intended to cover all legal requirements of the design. It is the consultant's responsibility to provide complete drawings and specifications to meet code requirements.

13300 Spraypark / Splash Pad Equipment

General.

Provide shaded seating nearby, but not too close to the wet area, for adults.

All user accessible components shall be tamper-resistant, powder coated stainless steel or equal non-corrosive material (no aluminum or galvanized steel).

Specify 316 stainless steel impellers in pumps, if any and if available.

Provide a manufacturer's 10-year warranty. Contractor shall be responsible for installation of any manufacturer warranty related materials during the warranty period.

Limit water features to those with flow rates less than 60 gpm, and preferably **less than 20 gpm**.

Do not specify spray units with small outlet holes. They quickly clog with the local hard water unless a recirculating system with chemical balancing is a part of the design.

User controlled activators should provide for a spray sequence program lasting less than 5 minutes.

Provide backflow protection (no less than an RPPA) between the irrigation system and the splash pad water supply to prevent cross contamination.

> What this generally means is an RPPA at the site entry point to protect the public system in the street from the park, then a "T" running to the splash pad and domestic water needs, before another RPPA leading to the irrigation system. This can all occur at the street if the tap point is in a visually obscure point in the park.

Provide a shut off valve for control of the splash pad features.

Write an open specification as to manufacturer, but the installer must be approved (factory certified) by the particular manufacturer actually installed.

Signage. Reference drawing in this section for the following sign (see section 10426 for additional mounting requirements and height):

No Dogs Signage. Mount one sign at each entrance to the splash pad area.

Drain to Sewer. Per agreement with the Building Department, all splash pad water features may drain direct to the storm sewer, no filters or sand trap, although do provide adequate cleanouts. These Splash Pad features may also be drained to the sanitary sewer if design permission is received from the owner (OAS) and Building Department, and a sand trap is installed. (Note that sand traps require a vent stack and sampling box per the Southern Nevada UPC Code Amendments.)

Codes and Regulations.

> Health District: If these types of features do not provide for human submersion or recirculation of water, no permit is required from the Health District.
>
> Building Department: The Building Department has decided that they do not fall under the Pool Code if it is a direct drain system. If there is a recirculating system on the splash pad, it then falls under the Pool Code and would need to drain to the sanitary sewer through a sand trap. Otherwise, direct drain systems may go into the storm sewer, no filters or sand traps required. Field inspections by the Building Department falls under the requirements of the Plumbing Code, not the Pool Code.

Sanitation District: The Sanitation District has provided conflicting statements. They look to UPC 714.2 to say that the rainwater collected by these drains cannot go into the sanitary sewer. They also feel that the water feature water must go into the sanitary. In any case, they rely on the Building Department for all plan check enforcement.

Southern Nevada Water Authority: The Drought Plan by the Southern Nevada Water Authority does not restrict the use of splash pads, on the assumption that the water is either recycled or drains to sanitary sewer for treatment and reuse, so drain to storm sewer may be a problem.

Recirculation System. If there are more than about 8 water features in the park, a recirculating system needs to be explored. Parks with only 2 or 3 features can direct drain to the sewer. If a recirculating system is not installed, the installation must provide site space for a future retrofit for such a system including filtration system, chemical treatment system, and holding tank. In addition the drain lines from the water feature drains must initially run in the area of the future holding tank so that the splash pad area is not disturbed during the retrofit. Also, the splash pad needs to be located on the site at an elevation and adjacency, such that a future drain line to the sanitary sewer can be installed from the recirculating system when retrofitted.

These recirculating systems are very much like a swimming pool's system and requires daily startup and chemical testing every two hours. Receive concurrence of adequate city's aquatics staffing prior to design.

Controller. If the park contains only 2 or 3 features, they may be mechanically controlled (simple timer, not a computerized sequential controller).

Controller must be easily programmable by on-site City staff. Water supply to features must be on a central valve tied to a secure variable timer so that even with tampered activation devices, the water supply will be cut off at night. The system needs to be able to be completely gravity drained each fall. Provide the owner with winter caps for all nozzles.

The resilient surface requirement has been eliminated due to its cost, short life, and sanitation concerns. Unless there are climbing elements in the Spraypark that require a resilient fall area, use a sealed medium broom finish concrete as the finish surface. Concrete coatings or topping shall not be used on the concrete. Specify a penetrating sealer/hardener which may also serve as a curing agent. Other than the use of such a multipurpose penetrating sealer/hardener/curing agent, do not allow any curing agents to be used on the concrete regardless of what the manufacturer of the materials represents for compatibility between the curing agent and the penetrating sealer. The city has experienced compatibility problems on past projects. If the penetrating sealer is to be applied some time after the concrete has hardened, require the contractor to cure the slab by covering with white poly; see the concrete section of these standards for requirements..
Resilient Surface. When providing a required resilient surface in the splash pad area, comply with the following:

Manufacturers. Water Play Feature surfacing approved by the Clark County Health District include:

BRG (TotTurf)	As distributed by:	Robertson Industries, Inc., (800) 858-0519
-OR-		
Saf-Dek	As distributed by:	No Fault Industries, Inc., (800)-232-7766

Wear Surface. Wear surface shall consist of ethylene propylene diene monomer (EPDM) particles adhered with a polyurethane binder formulated to produce an even, uniform surface ("EPDM Granules").

- EPDM particles shall meet requirement of ASTM D 412 for tensile strength and elongation.

- ASTM D 2240 (Shore A) hardness of 50-70, not less than 25 percent rubber hydrocarbons.
- EPDM shall be peroxide cured with an EPDM content of 26% and shall include a processing aid to prevent hardness.
- Size of rubber particles shall be not less than 1.0 mm, nor greater than 3.0 mm, across.
- Binder shall be not less than 20 percent of total weight of rubber used in the wear surface, and shall provide 100 percent coating of the particles.
- Thickness of wear surface shall be minimum 12.5 mm (1/2 inch).
- The wear surface shall be porous.

Binder. #88-M-41: No substitutions.

- Binder: Binder for safety surfacing shall be 88-M-41, which is specifically designed for use with rubber granule material for outdoor installations.
- 88-M-41 is a single component polyurethane prepolymer formulated using a polymeric form of Diphenylmethane 4, 4' Diisocyanate (MDI).
- No toluene diphenel isocyanate (TDI) shall be used.
- No filler materials shall be used in the urethane such as plasticizers and the catalyzing agent shall contain no heavy metals.
- Weight of polyurethane shall be no less than 1.02 Kg/1 (8.5 lbs/gal) and no more than 1.14 Kg/1 (9.5 lbs/gal).
- Proof of 88-M-41 as binder must be submitted from approved testing laboratory.

Extraction Test Submittal. Extraction test results performed by a qualified testing laboratory shall be submitted for use of products at Water Feature Areas. If Contractor submits an "or equal" for use at Water Feature Areas other than what is specified, an Extraction Test performed by a qualified testing laboratory is required for submission to the Clark County Health District for review and approval of results per NSF standards. Contractor shall submit Extraction test data to the Project Engineer.

[The above Extraction Test Submittal requirement is a must in every specification to insure the manufacturer considered performs the tests or submits the data. With "or equal" requirements, we can open the door to others but then someone must do the tests for submission to the Clark County Health District for approval. The costs for these tests are $10,000 +.]

13700 Security Access and Surveillance

This Section contains the requirements for:

(1) Security Alarm System,
(2) Distress Alarms,
(3) Access Control, and
(4) Surveillance.

Related Sections:
Reference Section 08710 "Door Hardware" for referenced electrified door hardware.
Reference Section 16742 "Communication & Data Processing Equipment" for related requirements.

When preparing construction documents for these systems, the prime construction contractor's (Contractor) scope of work needs to be clearly separated from any work furnished by the Owner's Vendor(s). Do not use "by others" in the documents. Use specific language to distinguish each various vendor's work from the Contractor's work and from the other vendors.

1. Security Alarm System

Most facilities have a security alarm system installed and monitored by AlarmCo. Coordinate with Field Operations (Debi Fields x2499, or Marshall Hutchinson x6094 if a remodel) during design, construction and new service move-in.

2. Distress Alarms

Within the City Hall campus, the possible need for push button distress alarms at workstations having direct contact with the public should be discussed with Detention and Enforcement during the design. All cash drawers require drawer detection activated switches and adjacent push button distress alarms (Reference Section 11001 Design Information – Equipment).

Alarm switches at facilities within the City Hall campus connect to the local phone board for direct connection to the local Detention and Enforcement dispatch office.

Alarm switches outside of the City Hall campus connect to the facility's security alarm system, including cash drawer removal detection.

Consultant shall verify facility requirements during design.

3. Access Control

General. Access control is required for all new projects in the City of Las Vegas. Where possible existing buildings should be retrofitted with access control.

Detention and Enforcement Coordinator: Sarahetta Thompson x2462 or Kirk Miley #5292

The City's access system is contracted through Diebold, Inc. Detention and Enforcement administers and programs the system once hardware is installed. The D&E Coordinator needs to be involved during the design and will be the prime contact-coordinator for Diebold's involvement. Project drawings need to be reviewed and discussed with Detention/Diebold as early as practical and during the final drawing review for the project.

The following are the standard requirements to be provided within a project construction contract to

provide for the Owner's Access Control System installation.

Component Outline.

Component	Provided by
Electrical conduit and J-boxes	Contractor
Electrified Door Hardware	Contractor
Push-buttons, cables & connections for manual activation of hardware	Contractor
Electrified Door Hardware Power Supplies, connections & cables	Contractor
110V AC power at Telephone Back Board (TBB)	Contractor
Incoming Phone Line to TBB (for modem)if LAN connection is unavailable	Contractor
Low voltage cables	Contractor
Connections of low voltage cables to door hardware components	Contractor
Main Control Boards (Smart 8's)	Owner's Vendor
Door Control Boards (SR1's)	Owner's Vendor
Access System Power Supplies	Owner's Vendor
Modem, when required if LAN is unavailable.	Owner's Vendor
Readers, key pads, motion sensors	Owner's Vendor

Responsibilities may vary on remodel projects and additions of access control to existing facilities; Consult Owner's Project Manager.

Component Requirements.

Electrical Conduits and Boxes

Conduits:
¾" minimum, 1" preferred, type as allowed by code for the location, flexible conduits limited to 6' maximum length at end of run only, MC and Armored cable prohibited. All conduits to have labeled cables between boxes and to all device locations.

Provide conduit for electrified door hardware from the 4"X4"J-box (Door Control Box) located in the ceiling above the controlled door on the secured side of the door, to the doorframe at the location appropriate for the hardware specified: Stub at strike for electric strikes, at hinge power transfer device for electric latch/exit device. Provide cable from device through opening in frame to Door Control Box and back to TBB in designated telephone room. Terminate connections on all door hardware and run back to TBB. See note under "Door Control Box" below.

Reader/Keypad J-boxes:
Wall mount locations - 4S J-box with single gang ring and blank cover mounted at 48" AFF.
Doorframe mount locations - Provide conduit from Door Control Box to door frame assembly, provide 3/4" hole in frame with a grommet, at reader location (coordinate with Owner, typically 48" AFF), provide cable through hole to Door Control Box.

Magnetic Locks:
When Magnetic Locks are used, provide conduit stub from Door Control Box into the doorframe at the head, on the latch side of the door. Provide 3/4" drill with grommet at magnetic lock location and cable through hole to Door Control Box.

Magnetic Hold-Open Devices:
When magnetic hold-open devices are used, provide a 4S J-box with single gang ring and blank cover on the wall the door opens against. Locate box behind the door when in the open position, 2" from the latch side and 2 " from the top of the door. Typically not part of Access Control System. Need location for conduit terminate, typically Fire Control System.

Motion Look-Down Sensors:
When motion sensors are used, provide conduit from the Door Control Box to the doorframe, centered above door.

Door Control Box:
Provide 4" x 4" x 4" J-box with blank cover above ceiling (max. 10' height from floor) on the secure side of the doorway, at or near each door being controlled (provide access door in ceiling if lay-in panels are not being used). Label interior of box with door number. Connect conduits from all devices for the door. Provide conduit to Main Control Box on TBB. Each Door Control Box will have two separate cables (22 ga. 6 conductor) and (18 ga. 2 conductor) shielded stranded color coded cables provided to the Main Control Box on TBB.
Note: Door control box will be located on TBB for better serviceability if reader (and/or keypad) is located within 500 cable feet. Number of door control boxes dependent on space availability on TBB. In cases where there is no room on TBB for the Door Control Boxes or the distance is greater than 500 cable feet then the door control boxes will be mounted in the ceiling attached to the 4" x 4" x 4" J-box.

Main Control Box:
Provide 25"W x 18"H area on TBB for Main Control Box supplied by Diebold. Stub conduits in close proximity and provide for connection to telephone blocks, network connections and 110V AC power outlet. When more than 16 doors are controlled, additional Main Control Boxes may be required; consult Owner's Vendor.

Electrified Door Hardware
Electrified door hardware (strikes, latches, exit devices, magnetic locks, magnetic hold-open devices and power transfer devices) to be provided by Contractor. The contractor is to provide wiring instructions to Owner's Vendor for connection to control system. The contractor is to terminate all hardware connections at the door & bring back to TBB for connection to access control system.

Push Buttons, cables and connections for Manual Activation of Hardware
Provide push buttons at designated locations for manual override of the access control system including conduits & cables from the push-button through the Door Control Box and to the electrified door hardware. Provide 24" loop of extra cable in the Door Control Box for future connection to the Door Control Card by the Owner's Vendor.

Electrified Door Hardware Power Supplies and connections
Provide power supplies for electrified strikes, latches and exit devices as recommended by hardware manufacturer. Locate hardware power supplies at TBB near access control power supplies. Provide cables and connections from power supplies through the appropriate Door Control box(es) and power transfer devices, if any, to the electrified device. Provide 24" loop of extra cable in the Door Control Box for future connection to the Door Control Card by the Owner's Vendor. Provide cable and connection to Fire Control System if required.

110V AC power at Telephone Back Board
In addition to the power requirements for the phone and network systems, provide 110V AC power for the door hardware power supplies and the access control system power supplies at the TBB within 3' of Main Control Box.

Network Connection to TBB (or when not available)
Incoming Phone Line (for communication to Server)
When the TBB is located outside of the City Hall Campus, network or modem connection will be used to connect to the system server. Provide a dedicated phone line for the modem (RJ31 jack) or network connection (RJ45 jack) at the TBB. If used, the modem will be provided by the "Owner's Vendor."

Low voltage cables and connections to components

Low Voltage cables must be provided between all components i.e. Main Control Boxes, Door Control Boxes, and access control devices. Connection and operational testing of all low voltage components and hardware to the access control system. 22 ga. 6 conductor shielded stranded color coded, & 18 ga. 2 conductor shielded stranded color coded wire should be used for all connections to devices unless otherwise specified.

Main Control Boards

Smart Read 8 (S8) Main Control Boards control between 16 and 64 doors per board. Consult Owner's Vendor for number Main Control Boards when doors controlled at the site exceed 16. These boards connect to the system server via direct connection or modem. These boards receive and store access permission information downloaded from the system server and provide instruction to the Door Control Boards when access is requested. These boards are located in the Main Control Box

Door Control Boards

Smart Read 1 (SR1) Door Control Boards send and receive signals to and from the all system components at a particular door and request access permissions from the Main Control Boards. Upon verification of proper permission it sends a signal to operate the electrified door hardware. These boards are located on the TBB or when unavailable, in the ceiling above each door at the Door Control Box.

Access System Power Supplies

12V DC transformers supplying power to the access system components with the exception of electrified door hardware. Access System Power Supplies are to be located at the TBB near the Main Control Box they power and connect to the Contractor provided 110V AC at the TBB.

Readers, keypads, motion sensors, manual override/door open buttons

Readers, keypads, motion sensors, and door buttons connect to the Door Control Board for power and communication. These devices request electrified door hardware activation.

Extended Warranties

No specific requirements for extended warranties. Contractor to provide warranty information for any supplied components and/or systems that exceed the 1-year general warranty period in the closeout documentation for the project.

EXAMPLE OF TYPICAL INSTALLATION

(Requirements vary, coordinate with Detention & Enforcement)

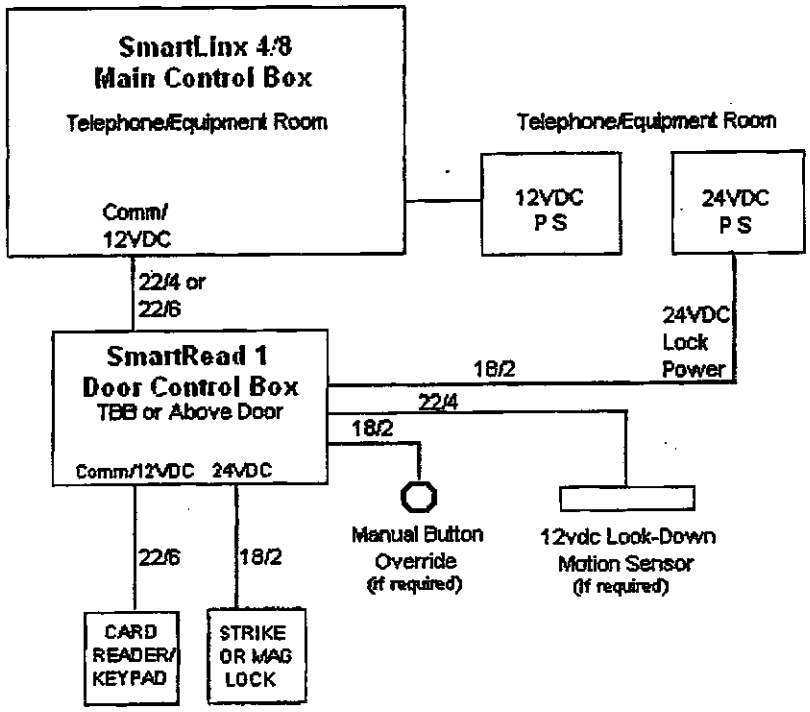
Typical Access Point Requirements. The typical access point consists of 3 components, the locking device, the input device (card reader and/or keypad), and the control board, connected with conduit/cables and a home run to the telephone board for the building. There is also a Main Control Board at the telephone backboard that all access points connect to.

Door Locking Device:	Refer to 08710 Door Hardware, Electronic Locks for Access System. Provided by Contractor.
Input Device:	HID Mini Prox Reader, on door Jamb or wall j-box, 44 inches above finished floor (for card user access only). A keypad will be added when Metro or other non-city personnel need access (max. 500 cable feet from SR-1).

Control unit:	SmartRead 1 (SR-1) in a hinged-lid j-box in plenum/attic above door or TBB (max height 10' from floor) (max. 1000 cable feet from main controller).
Main Controller:	SmartLinx 8 located on building telephone backboard (TBB).

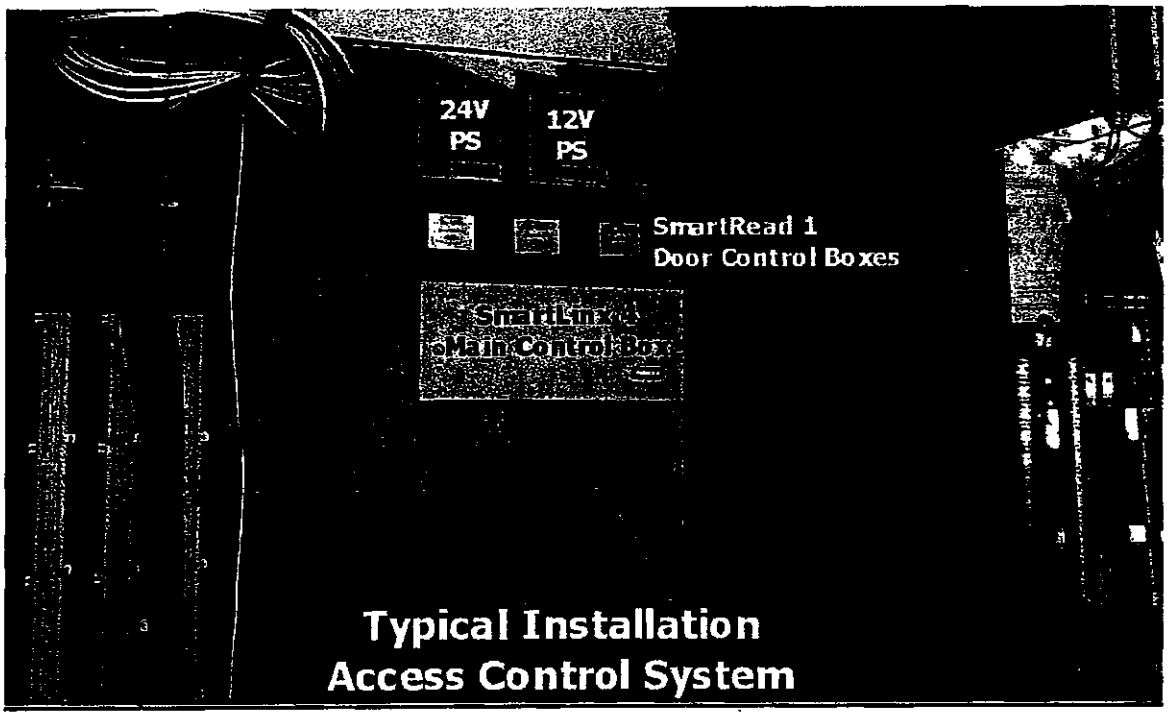
Wiring Requirements

Diebold Wire Schematic



Typical Telephone Backboard Requirements, system with more than 16 doors. The Main Control Board(s) are located at the building Telephone Backboard (TBB). These Smart Linx 8 (S8) boards are housed in boxes with hinged lids, mounted to the TBB. The S8's dimensions are 23 ¼" width, 13 ½" height, 5" deep, and a 28" door swing. The S8 needs a 120-volt outlet for power supply and the locking device power supply. The S8/S4 needs either a dial-tone phone line to communicate back to the host pc via modem, or a LAN connection to local network router or switch.

Typical Phone Back Board Installation



4. Surveillance

General. The OAS Project Manager will confirm whether a surveillance system is required for your project. Generally, it will not be required, although empty conduits or conduit stub outs for future cameras should be considered where running them later will be difficult. System will usually be monitored and recorded within each facility since Detention and Enforcement currently does not have the staff to live monitor these systems.

When required, CCTV cameras should be installed in the following areas:

1. Building Entrance / Exit points:
2. Elevator Lobbies
3. Elevator Cabs
4. Covered Parking Structures
5. High traffic public service counters
6. Public side of cash transactions

Any building that will be located in the overall City Hall Campus should include a conduit pathway dedicated to low voltage with sufficient capacity to include a CCTV fiber optic link to the 2nd floor CCTV control center in the old City Hall jail.

Any new building design should specifically include sufficient backboard space, allocated in one of the telephone rooms (or closets), for installation of CCTV camera power, recording and transmission equipment.

CCTV cable requirements.

No CCTV coax cable runs in excess of 1,500 feet. No CCTV power cable runs in excess of 700 feet.

Installed CCTV video transmission cables to be installed and constructed as follows:

Cable distances of less than 750 feet will require coaxial cable of RG59/U designation that is constructed with a 20 gauge, solid copper center cable. The shielding portion of the coaxial cable must be constructed of solid copper strands and woven so as to provide a minimum of 95% shielding coverage. Belden cable # 543945 or equivalent.

Cable distances greater than 750 feet and less than 1,500 feet will require coaxial cable of RG6/U designation that is constructed with an 18 gauge, solid copper center cable. The shielding portion of the coaxial cable must be constructed of solid copper strands and woven so as to provide a minimum of 95% shielding coverage, Belden Cable # 533945 or equivalent.

CCTV power cables will require a 16 gage, stranded copper, 2 conductor, Belden Cable 5200UE or equivalent.

Each camera will have a dedicated power cable run to the camera power supply.

CCTV conduit requirements.

Minimum Conduit size of ¾ inch for CCTV conduit runs. Camera mounting points are generally a 4-S box with a single gang mud ring cover.

All National Electrical Code requirements will be observed during design and installation of CCTV conduit.

Conduit pull boxes should be encouraged in long cable runs to minimize problems and damage to cable during installation.

Elevator CCTV cable requirements.

The elevator contractor will be required to provide two free pairs (4 total conductors) of each elevator cab's travel cable for installation of a CCTV camera. One pair of conductors will carry the video signal and the other pair of conductors will carry the 24vac to power the camera. The travel cable conductors designated for CCTV system use should be clearly identified by the elevator contractor in both the elevator cab and the elevator control panel.

Video transmission cables from the CCTV head end to the elevator control panel will require a Category 5 compliant data cable to each elevator control panel.
Elevator CCTV power cables will require a 16 gage, stranded copper, 2 conductor, Belden Cable 5200UE or equivalent to each elevator control panel.

Elevator CCTV conduit requirements.

Conduit shall remain consistent with the established conduit sizing in the garage parking area CCTV conduit requirements.

Conduit installation to each elevator control panel cabinet must be coordinated with elevator contractor to determine acceptable entrance points for CCTV system conduit.

13700 Security Access and Surveillance

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Related Sections:
Reference Section 08710 "Door Hardware" for referenced electrified door hardware.
Reference Section 16742 "Communication & Data Processing Equipment" for related requirements.

When preparing construction documents for these systems, the prime construction contractor's (Contractor) scope of work needs to be clearly separated from any work furnished by the Owner's Vendor(s). Do not use "by others" in the documents. Use specific language to distinguish each various vendor's work from the Contractor's work and from the other vendors.

1. Security Alarm System

Most facilities have a security alarm system installed and monitored by AlarmCo. Coordinate with Field Operations (Debi Fields x2499, or Marshall Hutchinson x6094 if a remodel) during design, construction and new service move-in.

2. Distress Alarms

Within the City Hall campus, the possible need for push button distress alarms at workstations having direct contact with the public should be discussed with Detention and Enforcement during the design. All cash drawers require drawer detection activated switches and adjacent push button distress alarms (Reference Section 11001 Design Information – Equipment).

Alarm switches at facilities within the City Hall campus connect to the local phone board for direct connection to the local Detention and Enforcement dispatch office.

Alarm switches outside of the City Hall campus connect to the facility's security alarm system, including cash drawer removal detection.

Consultant shall verify facility requirements during design.

3. Access Control

General. Access control is required for all new projects in the City of Las Vegas. Where possible existing buildings should be retrofitted with access control.

Detention and Enforcement Coordinator: Sarahetta Thompson x2462 or Kirk Miley #5292

The City's access system is contracted through Diebold, Inc. Detention and Enforcement administers and programs the system once hardware is installed. The D&E Coordinator needs to be involved during the design and will be the prime contact-coordinator for Diebold's involvement. Project drawings need to be reviewed and discussed with Detention/Diebold as early as practical and during the final drawing review for the project.

The following are the standard requirements to be provided within a project construction contract to

provide for the Owner's Access Control System installation.

Component Outline.

Component	Provided by
Electrical conduit and J-boxes	Contractor
Electrified Door Hardware	Contractor
Push-buttons, cables & connections for manual activation of hardware	Contractor
Electrified Door Hardware Power Supplies, connections & cables	Contractor
110V AC power at Telephone Back Board (TBB)	Contractor
Incoming Phone Line to TBB (for modem)if LAN connection is unavailable	Contractor
Low voltage cables	Contractor
Connections of low voltage cables to door hardware components	Contractor
Main Control Boards (Smart 8's)	Owner's Vendor
Door Control Boards (SR1's)	Owner's Vendor
Access System Power Supplies	Owner's Vendor
Modem, when required if LAN is unavailable.	Owner's Vendor
Readers, key pads, motion sensors	Owner's Vendor

Responsibilities may vary on remodel projects and additions of access control to existing facilities; Consult Owner's Project Manager.

Component Requirements.

Electrical Conduits and Boxes

Conduits:
¾" minimum, 1" preferred, type as allowed by code for the location, flexible conduits limited to 6' maximum length at end of run only, MC and Armored cable prohibited. All conduits to have labeled cables between boxes and to all device locations.

Provide conduit for electrified door hardware from the 4"X4"J-box (Door Control Box) located in the ceiling above the controlled door on the secured side of the door, to the doorframe at the location appropriate for the hardware specified: Stub at strike for electric strikes, at hinge power transfer device for electric latch/exit device. Provide cable from device through opening in frame to Door Control Box and back to TBB in designated telephone room. Terminate connections on all door hardware and run back to TBB. See note under "Door Control Box" below.

Reader/Keypad J-boxes:
Wall mount locations - 4S J-box with single gang ring and blank cover mounted at 48" AFF.
Doorframe mount locations - Provide conduit from Door Control Box to door frame assembly, provide 3/4" hole in frame with a grommet, at reader location (coordinate with Owner, typically 48" AFF), provide cable through hole to Door Control Box.

Magnetic Locks:
When Magnetic Locks are used, provide conduit stub from Door Control Box into the doorframe at the head, on the latch side of the door. Provide 3/4" drill with grommet at magnetic lock location and cable through hole to Door Control Box.

Magnetic Hold-Open Devices:
When magnetic hold-open devices are used, provide a 4S J-box with single gang ring and blank cover on the wall the door opens against. Locate box behind the door when in the open position, 2" from the latch side and 2 " from the top of the door. Typically not part of Access Control System. Need location for conduit terminate, typically Fire Control System.

Motion Look-Down Sensors:
When motion sensors are used, provide conduit from the Door Control Box to the doorframe, centered above door.

Door Control Box:
Provide 4" x 4" x 4" J-box with blank cover above ceiling (max. 10' height from floor) on the secure side of the doorway, at or near each door being controlled (provide access door in ceiling if lay-in panels are not being used). Label interior of box with door number. Connect conduits from all devices for the door. Provide conduit to Main Control Box on TBB. Each Door Control Box will have two separate cables (22 ga. 6 conductor) and (18 ga. 2 conductor) shielded stranded color coded cables provided to the Main Control Box on TBB.
Note: Door control box will be located on TBB for better serviceability if reader (and/or keypad) is located within 500 cable feet. Number of door control boxes dependent on space availability on TBB. In cases where there is no room on TBB for the Door Control Boxes or the distance is greater than 500 cable feet then the door control boxes will be mounted in the ceiling attached to the 4" x 4" x 4" J-box.

Main Control Box:
Provide 25"W x 18"H area on TBB for Main Control Box supplied by Diebold. Stub conduits in close proximity and provide for connection to telephone blocks, network connections and 110V AC power outlet. When more than 16 doors are controlled, additional Main Control Boxes may be required; consult Owner's Vendor.

Electrified Door Hardware
Electrified door hardware (strikes, latches, exit devices, magnetic locks, magnetic hold-open devices and power transfer devices) to be provided by Contractor. The contractor is to provide wiring instructions to Owner's Vendor for connection to control system. The contractor is to terminate all hardware connections at the door & bring back to TBB for connection to access control system.

Push Buttons, cables and connections for Manual Activation of Hardware
Provide push buttons at designated locations for manual override of the access control system including conduits & cables from the push-button through the Door Control Box and to the electrified door hardware. Provide 24" loop of extra cable in the Door Control Box for future connection to the Door Control Card by the Owner's Vendor.

Electrified Door Hardware Power Supplies and connections
Provide power supplies for electrified strikes, latches and exit devices as recommended by hardware manufacturer. Locate hardware power supplies at TBB near access control power supplies. Provide cables and connections from power supplies through the appropriate Door Control box(es) and power transfer devices, if any, to the electrified device. Provide 24" loop of extra cable in the Door Control Box for future connection to the Door Control Card by the Owner's Vendor. Provide cable and connection to Fire Control System if required.

110V AC power at Telephone Back Board
In addition to the power requirements for the phone and network systems, provide 110V AC power for the door hardware power supplies and the access control system power supplies at the TBB within 3' of Main Control Box.

Network Connection to TBB (or when not available)
Incoming Phone Line (for communication to Server)
When the TBB is located outside of the City Hall Campus, network or modem connection will be used to connect to the system server. Provide a dedicated phone line for the modem (RJ31 jack) or network connection (RJ45 jack) at the TBB. If used, the modem will be provided by the "Owner's Vendor."

Low voltage cables and connections to components

Low Voltage cables must be provided between all components i.e. Main Control Boxes, Door Control Boxes, and access control devices. Connection and operational testing of all low voltage components and hardware to the access control system. 22 ga. 6 conductor shielded stranded color coded, & 18 ga. 2 conductor shielded stranded color coded wire should be used for all connections to devices unless otherwise specified.

Main Control Boards

Smart Read 8 (S8) Main Control Boards control between 16 and 64 doors per board. Consult Owner's Vendor for number Main Control Boards when doors controlled at the site exceed 16. These boards connect to the system server via direct connection or modem. These boards receive and store access permission information downloaded from the system server and provide instruction to the Door Control Boards when access is requested. These boards are located in the Main Control Box

Door Control Boards

Smart Read 1 (SR1) Door Control Boards send and receive signals to and from the all system components at a particular door and request access permissions from the Main Control Boards. Upon verification of proper permission it sends a signal to operate the electrified door hardware. These boards are located on the TBB or when unavailable, in the ceiling above each door at the Door Control Box.

Access System Power Supplies

12V DC transformers supplying power to the access system components with the exception of electrified door hardware. Access System Power Supplies are to be located at the TBB near the Main Control Box they power and connect to the Contractor provided 110V AC at the TBB.

Readers, keypads, motion sensors, manual override/door open buttons

Readers, keypads, motion sensors, and door buttons connect to the Door Control Board for power and communication. These devices request electrified door hardware activation.

Extended Warranties

No specific requirements for extended warranties. Contractor to provide warranty information for any supplied components and/or systems that exceed the 1-year general warranty period in the closeout documentation for the project.

EXAMPLE OF TYPICAL INSTALLATION

(Requirements vary, coordinate with Detention & Enforcement)

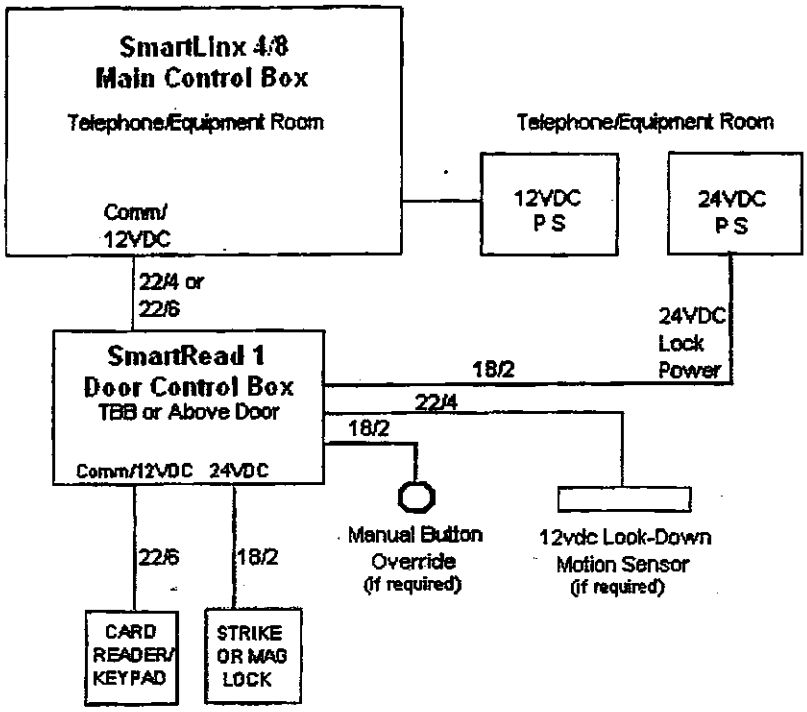
Typical Access Point Requirements. The typical access point consists of 3 components, the locking device, the input device (card reader and/or keypad), and the control board, connected with conduit/cables and a home run to the telephone board for the building. There is also a Main Control Board at the telephone backboard that all access points connect to.

Door Locking Device:	Refer to 08710 Door Hardware, Electronic Locks for Access System. Provided by Contractor.
Input Device:	HID Mini Prox Reader, on door Jamb or wall j-box, 44 inches above finished floor (for card user access only). A keypad will be added when Metro or other non-city personnel need access (max. 500 cable feet from SR-1).

Control unit:	SmartRead 1 (SR-1) in a hinged-lid j-box in plenum/attic above door or TBB (max height 10' from floor) (max. 1000 cable feet from main controller).
Main Controller:	SmartLinx 8 located on building telephone backboard (TBB).

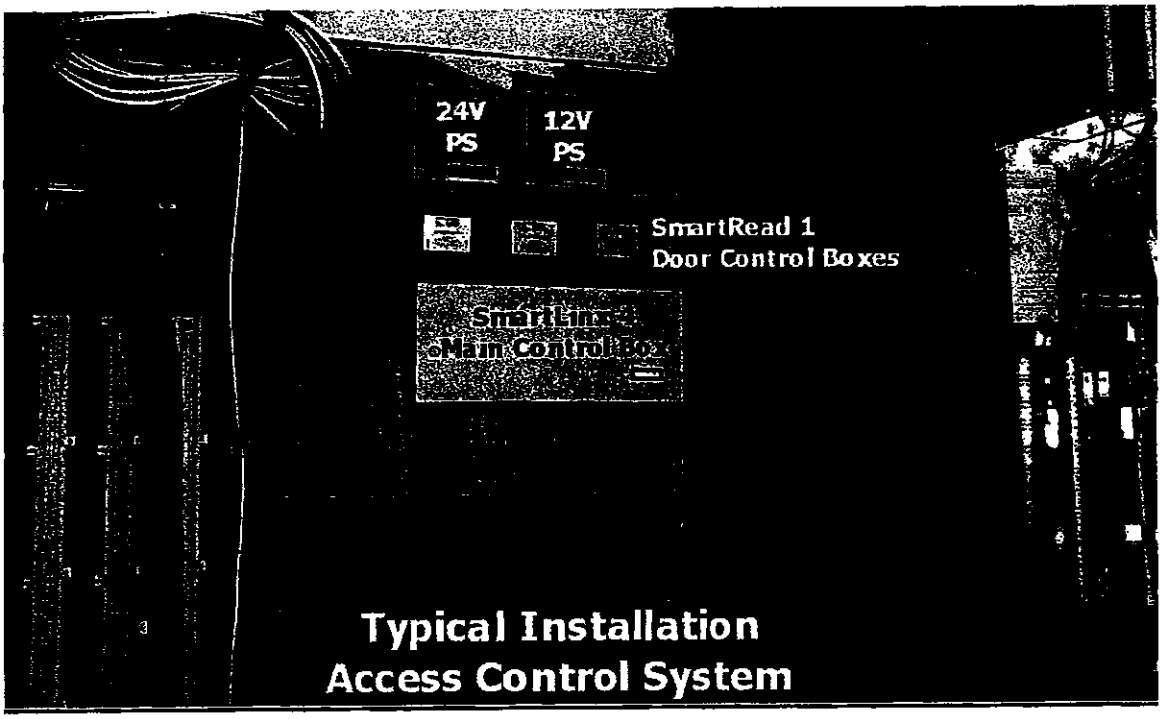
Wiring Requirements

Diebold Wire Schematic



Typical Telephone Backboard Requirements, system with more than 16 doors. The Main Control Board(s) are located at the building Telephone Backboard (TBB). These Smart Linx 8 (S8) boards are housed in boxes with hinged lids, mounted to the TBB. The S8's dimensions are 23 ¼" width, 13 ½" height, 5" deep, and a 28" door swing. The S8 needs a 120-volt outlet for power supply and the locking device power supply. The S8/S4 needs either a dial-tone phone line to communicate back to the host pc via modem, or a LAN connection to local network router or switch.

Typical Phone Back Board Installation



4. Surveillance

General. The OAS Project Manager will confirm whether a surveillance system is required for your project. Generally, it will not be required, although empty conduits or conduit stub outs for future cameras should be considered where running them later will be difficult. System will usually be monitored and recorded within each facility since Detention and Enforcement currently does not have the staff to live monitor these systems.

When required, CCTV cameras should be installed in the following areas:

1. Building Entrance / Exit points.
2. Elevator Lobbies
3. Elevator Cabs
4. Covered Parking Structures
5. High traffic public service counters
6. Public side of cash transactions

Any building that will be located in the overall City Hall Campus should include a conduit pathway dedicated to low voltage with sufficient capacity to include a CCTV fiber optic link to the 2nd floor CCTV control center in the old City Hall jail.

Any new building design should specifically include sufficient backboard space, allocated in one of the telephone rooms (or closets), for installation of CCTV camera power, recording and transmission equipment.

CCTV cable requirements.

No CCTV coax cable runs in excess of 1,500 feet. No CCTV power cable runs in excess of 700 feet.

Installed CCTV video transmission cables to be installed and constructed as follows:

Cable distances of less than 750 feet will require coaxial cable of RG59/U designation that is constructed with a 20 gauge, solid copper center cable. The shielding portion of the coaxial cable must be constructed of solid copper strands and woven so as to provide a minimum of 95% shielding coverage. Belden cable # 543945 or equivalent.

Cable distances greater than 750 feet and less than 1,500 feet will require coaxial cable of RG6/U designation that is constructed with an 18 gauge, solid copper center cable. The shielding portion of the coaxial cable must be constructed of solid copper strands and woven so as to provide a minimum of 95% shielding coverage, Belden Cable # 533945 or equivalent.

CCTV power cables will require a 16 gage, stranded copper, 2 conductor, Belden Cable 5200UE or equivalent.

Each camera will have a dedicated power cable run to the camera power supply.

CCTV conduit requirements.

Minimum Conduit size of ¾ inch for CCTV conduit runs. Camera mounting points are generally a 4-S box with a single gang mud ring cover.

All National Electrical Code requirements will be observed during design and installation of CCTV conduit.

Conduit pull boxes should be encouraged in long cable runs to minimize problems and damage to cable during installation.

Elevator CCTV cable requirements.

The elevator contractor will be required to provide two free pairs (4 total conductors) of each elevator cab's travel cable for installation of a CCTV camera. One pair of conductors will carry the video signal and the other pair of conductors will carry the 24vac to power the camera. The travel cable conductors designated for CCTV system use should be clearly identified by the elevator contractor in both the elevator cab and the elevator control panel.

Video transmission cables from the CCTV head end to the elevator control panel will require a Category 5 compliant data cable to each elevator control panel.
Elevator CCTV power cables will require a 16 gage, stranded copper, 2 conductor, Belden Cable 5200UE or equivalent to each elevator control panel.

Elevator CCTV conduit requirements.

Conduit shall remain consistent with the established conduit sizing in the garage parking area CCTV conduit requirements.

Conduit installation to each elevator control panel cabinet must be coordinated with elevator contractor to determine acceptable entrance points for CCTV system conduit.

13851 Fire Alarm

Limited Models. The only systems that are acceptable in City facilities are:

Small systems. Models are limited to EST QS4, Siemens MXL-IQ, Simplex 4010, and Notifier AFP-200 (Notifier AFP-100 has been discontinued).

Large systems. Models are limited to EST EST-3, Siemens MXLV, Simplex 4100, and Notifier NFS-640.

Systems specified must meet the following requirements:

1) Only addressable systems are acceptable.
2) Systems and components must be UL Listed and FM Approved.
3) Systems MUST be easily and economically expandable.
4) Systems shall be designed with the ability to expand at least an additional 25% above current requirements.

Additional information is available at each manufacturers' web site.

EST Q4 http://www.est.net/QuickStart/prod_QS.cfm
EST EST-3 http://www.est.net/est3.cfm
Siemens MXL both models http://www.sbt.siemens.com/FIS/productdoc/catalogs/5000.pdf
Simplex 4010 http://xtra.simplexnet.com/a_e/FA/4010-0001.PDF
Simplex 4100 http://xtra.simplexnet.com/a_e/FA/4100-0013.PDF
Notifier AFP-100 http://www.notifier.com/datasheets/DN_6629.pdf
Notifier NFS-640 http://www.notifier.com/datasheets/DN_6856.pdf

Fire alarm system. A system of initiation devices, notification appliances, circuits and related components arranged to detect the presence of smoke and/or fire and annunciate the status of such presence and to initiate an appropriate response. Monitoring of fire sprinkler systems and the code required interior and exterior alarms indicating sprinkler flow are not "alarm systems", but may be a part of an alarm system when such a system is installed in a building.

Fire alarm systems are only required in certain occupancies and special conditions. The Building Code only addresses a limited number of conditions when a fire alarm system is required. The Fire Code must also be researched for determination of requirements. The City of Las Vegas does not have a policy of requiring fire alarm systems when otherwise not required by codes, except that manual activated fire alarm systems are sometimes required by the City's Fire Prevention Division on a case by case basis. The design consultant must confer with the Fire Prevention Division for such determination. When acceptable to the Fire Prevention Division, double action type manual pull boxes should be specified. Typically, electrical engineering consultants specify (and determine) fire alarm requirements. The National Electrical Code does not provide the guidance the engineer needs in making determinations. The lead design consultant must participate in making determinations. **Do not allow misleading and uninformed statements in the documents such as "provide fire alarm system as required".**

Buildings containing fire suppression or fire alarm systems are required to be provided with a rapid entry key box (Knox Box). Exact locations and determinations must be coordinated with the City's Fire Department Prevention Office for each such project.

Circuit Types. Unless otherwise required by the City's Fire Prevention Division for a particular project, the following Class and Styles of Circuits shall be specified:

- Initiating Device Circuits – Class A, Style D or E
- Signaling Line Circuits – Class A, Style 5, 6 or 7
- Notification Appliance Circuits – Class A, Style Z

Monitoring. The use of a system in which the operations of circuits and devices at a building (that is protected by a fire sprinkler system and/or a fire alarm system) are signaled to and supervised by an off-premise qualified company that is responsible for notifying the proper emergency response authority and the designated Owner's representative.

Monitoring is required for any fire sprinkler and any fire alarm system installed in a City of Las Vegas owned building. Monitoring of a fire sprinkler system is not construed as a fire alarm system.

Duct Detectors (smoke). Specify that any required duct detectors to be supplied by the fire alarm system contractor and installed by the HVAC contractor, if a fire alarm system is being provided for the project. Each detector should be easily and separately identifiable from other detectors when activated.

Protection. Provide wire guards or equal protection of detectors and devices in gymnasiums and recreational activity areas. Protection must be mechanically attached so impacts will not release the protection.

Other Standards. This standard is a companion to other standards describing features of fire detection and suppression systems. This design standard is not intended to duplicate or replace adopted code requirements.

Related City of Las Vegas design standards include:

- 10553 – Rapid Entry Key Boxes
- 13910 – Basic Fire Suppression Materials and Methods

Applicable codes and national standards to this City of Las Vegas design standard include, but are not limited to:

- International Building Code, 2003 Ed., Primarily Chapter 9. (effective date 5-19-04)
- City of Las Vegas Building Code Amendments, 2003 Ed.
- Uniform Fire Code, NFPA 1 2003 Ed., Primarily Chapter 13. (effective date 5-19-04)
- City of Las Vegas Fire Code Amendments, 2003 Ed.
- NFPA 72, National Fire Alarm Code, 2002 Ed.
- Regulations adopted by the State Fire Marshal for public education facilities, health and care facilities, or child care facilities.

13910 Basic Fire Suppression Materials and Methods

Design Standard and Applicability. Unless specifically requested, always provide fire sprinkler systems on all new and major remodel building projects, complete with electronic monitoring of all valves and water flow switches, regardless of the number of sprinklers and regardless of whether the applicable codes require a sprinkler system and monitoring. Sprinkler systems will be monitored by the City's contracted monitoring company. Provide a phone line for monitoring and require that any other suppression system within the building such as grease hood suppression systems and any fire alarm system, if provided, be connected to the monitoring panel. Provide an audible/visual sprinkler flow alarm on the outside of the building at a location acceptable to the Fire Department and audible/visual sprinkler flow alarm(s) in the interior of the building located where acceptable to the Fire Department.

In general, this fire sprinkler system requirement is not required for the following building types unless otherwise required by code or regulations:

- Park restrooms, concession stands and swimming pool bath houses.
- Freestanding, unoccupied, utility buildings, unless desired or required to protect the contents.
- Minor interior remodels.
- Small building additions if sprinkling the new portion would require upgrading the entire building.
- Modular structures (Provide sprinklers if occupied by students on a regular basis, even if less than 50 occupants). State Fire Marshal Regulations also mandate fire sprinklers in modular buildings under certain circumstances, including when multiple modular buildings are grouped together.

Request direction from the City Project Manager as to the specific minimum requirements for sprinklers and alarms when working with building remodels, additions, and unusual project types.

Generally a performance specification together with the drawing call-outs of equipment, items and notes required by this Section will be sufficient documentation for bidding purposes, with the sprinkler subcontractor providing a design-build service for the system after award. Verify with the City Project Manager during design whether specific detailed fire suppression drawings need to be engineered and prepared by the Consultant.

The actual use and proposed contents of buildings must be determined during programming and design when hazardous materials or high pile storage is intended in a building. The use and nature of the contents of a building must be made apparent on the bid documents in order to avoid construction change claims related to the adequacy of system design for the "target hazard".

Buildings containing fire suppression or fire alarm systems are required to be provided with a rapid entry key box (Knox Box). Exact locations and determinations must be coordinated with the City's Fire Department Prevention Office for each such project.

Other Standards. This standard is a companion to other standards describing features of fire detection and suppression systems. This design standard is not intended to duplicate or replace adopted code requirements.

Related City of Las Vegas design standards include:

- 10553 – Rapid Entry Key Boxes
- 13851 – Fire Alarm

Applicable codes and national standards to this City of Las Vegas design standard include, but are not limited to:

- International Building Code, 2003 Ed., Primarily Chapter 9. (effective date 5-19-04)
- City of Las Vegas Building Code Amendments, 2003 Ed.

- Uniform Fire Code, NFPA 1 2003 Ed., Primarily Chapters 13 and 20. (effective date 5-19-04)
- City of Las Vegas Fire Code Amendments, 2003 Ed.
- NFPA 13, Installation Of Sprinkler Systems, 2002 Ed.
- NFPA 14, Standpipe, Private Hydrant And Hose Systems, 2003 Ed
- NFPA 24, Private Fire Service Mains
- Regulations adopted by the State Fire Marshal for public education facilities, health and care facilities, or child care facilities.

The consultant and applicable sub-consultants are responsible for specifying the characteristics of compliance with codes and standards. Use of generic "provide system, as required" statements are prohibited. Consideration must be given during the design for locating the FDC (Fire Department Connection) and system main drain, or the Contractor may design it for you and you may not like the result. Typically, placement of these items is flexible and you can avoid the tragedy of a system main drain next to the main entry of the building without paying the contractor a change order, if the specifications are tight enough.

Acceptable pipe material. Fire sprinkler system piping shall be specified as schedule 40 pipe. Schedule 10 and thinwall pipe will not be accepted for fire sprinkler system piping.

Signage. Reference drawing in this section for the following sign:
Fire Riser Sign. Mount one sign centered on the exterior door into the fire riser room.

Fire Sprinkler Head Protection. Protect sprinkler heads from accidental discharge caused by thrown balls and other objects striking them in athletic and recreational areas. Protection must be mechanically attached so impacts will not release the protection. Provide protection or concealed heads over all wood flooring, regardless of activity.

14001 Design Information – Conveying Systems

Elevators. Reference Section 13700 Security Access and Surveillance for CCTV requirements and Section 16742 Communication & Data Processing Equipment for telephone requirements.

15001 Design Information – Mechanical

Water Pressure. The on-site water pressure measurement to use for the project design needs to be taken during the heaviest water usage for the area, probably during the morning residential irrigation time period. A re-occurring problem for City projects, particularly in park restrooms, is insufficient water pressure during this heavy usage time period to properly operate the toilet flush valves, since the designer used a design water pressure measured during a less busy time period. A booster pump is then required after construction completion so the flush valves operate during this heavy usage time period. If a booster pump is needed to cure this issue, it needs to be included in the original design and construction.

Underground Utility Tracing. Provide trace wire or detectable underground warning tape with identification for all underground utilities installed in non-conductive pipe. SpecText provides for tracer wire in the following sections;

- 02538 Sanitary Sewer
- 02551 Natural Gas Distribution
- 15140 Domestic Water Piping
- 15150 Sanitary Waste and Vent Piping
- 15160 Storm Drainage Piping
- 15175 Swimming Pool Piping and Equipment
- 15195 Gas Piping

Piping in CMU Walls. The current interpretation by Building and Safety of Section 313.2 of the 2000 Uniform Plumbing Code, "No piping shall be directly embedded in concrete or masonry," follows.

Plumbing supply lines should be run inside accessible plumbing chases or in furred out stud walls where possible, but may be run vertically inside CMU walls if they are run in non-grouted open cells and access panels are provided on the wall to access the plumbing joints. The consultant is advised that these access panels must be sized and shown on the drawings; general notes to cover this work are not acceptable. Vents and drains do not have the access panel requirement. All sleeving through continuous bond beams must be detailed by the structural engineer.

15410 Plumbing Fixtures

Reference Section 15001 Design Information – Mechanical for additional requirements.

General. Design and specify to meet building code, ADA, ANSI and NRS requirements for fixtures, locations and quantities. Additionally, do not specify to limit bidding to one manufacturer, see "Section 01010 Overview" of these standards and NRS 338.140.

Supervised Public Restrooms (office buildings, recreation centers).

Water Closets. American Standard, Kohler, or Gerber china fixtures. Specify wall hung fixtures where space for a serviceable plumbing chase (3' to 5' width) can be provided. Rim heights per code/ADA requirements without the use of special seats. Specify Sloan or Zurn flush valves. Avoid flush systems that require pressure tanks. In new construction, and in renovation work when power can easily be added at each fixture, provide automatic flush valves with manual mechanical override button (no battery operated valves).

Urinals: American Standard, Kohler or Gerber china fixtures, wall hung, Sloan or Zurn flush valves. In new construction, and in renovation work when power can easily be added at each fixture, provide automatic flush valves with manual mechanical override button (no battery operated valves).

Lavatories: American Standard or Kohler china fixtures, wall hung, top set, or undercounter mount type - Chicago, Delta, or Moen faucets with mixing valves and automatic shut-off. There are instances where wall hung should **only** be considered, i.e.: exterior restrooms attached to main buildings, safe key trailers and childrens' community centers. The extra cost of undercounter mount installations vs. top set should be analyzed for budget vs. aesthetics (typically, high end installations such as may apply in the City Hall tower will be undercounter mount installations).

Supervised Non-Public Restrooms. Same as supervised public restrooms except without requirement for automatic shut-off faucets.

Unsupervised Public Restrooms (Park restrooms and other areas without full-time personnel in close proximity).

Water Closets: Acorn Dura-Ware 2100 series, heavy gage type 304 stainless steel construction, no known equal. Wall hung blow-out jet type with hinged seat. Provide serviceable plumbing chase (5' min. width). Rim heights per code/ADA requirements without the use of special seats. Specify Sloan model 952-1.6 flush valve and HY-100-A Actuator, or equal.

Urinals: Acorn Penal-Ware, heavy gage type 304 stainless steel construction, no known equal. Wall hung straddle type. Sloan or Zurn flush valves. Provide serviceable plumbing chase (5' min. width). Specify Sloan model 990 (1.0 GPF) flush valve and HY-100-A Actuator, or equal.

Lavatories: Acorn Dura-Ware 1953-ADA fixture. Heavy gage 304 stainless steel construction, front access. Wall hung with bolts going through full depth of wall. Air control single temperature push button valve, Moen 8884 (single) or Moen 8886 (double) self-closing faucets (ADA approved). P-Trap in plumbing chase.

Instant water heaters: Instant water heaters are not to be specified in City of Las Vegas facilities.

NRS Requirements for Plumbing Fixtures. Comply with NRS 338.193 Standards for plumbing fixtures, and verify latest edition matches the following:

1. Each public building sponsored or financed by a public body must meet the standards made applicable for the building pursuant to this section.

2. Except as otherwise provided in subsections 3 and 4, each public building, other than a prison or jail, on which construction begins on or after March 1, 1992, and each existing public building which is expanded or renovated on or after March 1, 1992, must incorporate the following minimal standards for plumbing fixtures:

(a) A toilet which uses water must not be installed unless its consumption of water does not exceed 3.5 gallons of water per flush.

(b) A shower apparatus which uses more than 3 gallons of water per minute must not be installed unless it is equipped with a device to reduce water consumption to 3 gallons of water or less per minute.

(c) Each faucet installed in a lavatory or kitchen must not allow water to flow at a rate greater than 3 gallons per minute.

(d) A toilet or urinal which employs a timing device or other mechanism to flush periodically irrespective of demand must not be installed.

3. Except as otherwise provided in subsection 4, each public building, other than a prison or jail, on which construction begins on or after March 1, 1993, and each existing public building which is expanded or renovated on or after March 1, 1993, must incorporate the following minimal standards for plumbing fixtures:

(a) A toilet which uses water must not be installed unless its consumption of water does not exceed 1.6 gallons of water per flush.

(b) A shower apparatus which uses more than 2.5 gallons of water per minute must not be installed unless it is equipped with a device to reduce water consumption to 2.5 gallons of water or less per minute.

(c) A urinal which uses water must not be installed unless its consumption of water does not exceed 1 gallon of water per flush.

(d) A toilet or urinal which employs a timing device or other mechanism to flush periodically, irrespective of demand, must not be installed.

(e) A urinal which continually flows or flushes water must not be installed.

(f) Each faucet installed in a lavatory or kitchen must not allow water to flow at a rate greater than 2.5 gallons per minute.

(g) Each faucet installed in a public restroom must contain a mechanism which closes the faucet automatically after a predetermined amount of water has flowed through the faucet. Multiple faucets that are activated from a single point must not be installed.

4. The requirements of this section for the installation of certain plumbing fixtures do not apply to any portion of an existing public building which is not being expanded or renovated.

(Added to NRS by 1991, 1168)

15410 Plumbing Fixtures

Reference Section 15001 Design Information – Mechanical for additional requirements.

General. Design and specify to meet building code, ADA, ANSI and NRS requirements for fixtures, locations and quantities. Additionally, do not specify to limit bidding to one manufacturer, see "Section 01010 Overview" of these standards and NRS 338.140.

Supervised Public Restrooms (office buildings, recreation centers).

Water Closets. American Standard, Kohler, or Gerber china fixtures. Specify wall hung fixtures where space for a serviceable plumbing chase (3' to 5' width) can be provided. Rim heights per code/ADA requirements without the use of special seats. Specify Sloan or Zurn flush valves. Avoid flush systems that require pressure tanks. In new construction, and in renovation work when power can easily be added at each fixture, provide automatic flush valves with manual mechanical override button (no battery operated valves).

Urinals: American Standard, Kohler or Gerber china fixtures, wall hung, Sloan or Zurn flush valves. In new construction, and in renovation work when power can easily be added at each fixture, provide automatic flush valves with manual mechanical override button (no battery operated valves).

Lavatories: American Standard or Kohler china fixtures, wall hung, top set, or undercounter mount type - Chicago, Delta, or Moen faucets with mixing valves and automatic shut-off. There are instances where wall hung should **only** be considered, i.e.: exterior restrooms attached to main buildings, safe key trailers and childrens' community centers. The extra cost of undercounter mount installations vs. top set should be analyzed for budget vs. aesthetics (typically, high end installations such as may apply in the City Hall tower will be undercounter mount installations).

Supervised Non-Public Restrooms. Same as supervised public restrooms except without requirement for automatic shut-off faucets.

Unsupervised Public Restrooms (Park restrooms and other areas without full-time personnel in close proximity).

Water Closets: Acorn Dura-Ware 2100 series, heavy gage type 304 stainless steel construction, no known equal. Wall hung blow-out jet type with hinged seat. Provide serviceable plumbing chase (5' min. width). Rim heights per code/ADA requirements without the use of special seats. Specify Sloan model 952-1.6 flush valve and HY-100-A Actuator, or equal.

Urinals: Acorn Penal-Ware, heavy gage type 304 stainless steel construction, no known equal. Wall hung straddle type. Sloan or Zurn flush valves. Provide serviceable plumbing chase (5' min. width). Specify Sloan model 990 (1.0 GPF) flush valve and HY-100-A Actuator, or equal.

Lavatories: Acorn Dura-Ware 1953-ADA fixture. Heavy gage 304 stainless steel construction, front access. Wall hung with bolts going through full depth of wall. Air control single temperature push button valve, Moen 8884 (single) or Moen 8886 (double) self-closing faucets (ADA approved). P-Trap in plumbing chase.

Instant water heaters: Instant water heaters are not to be specified in City of Las Vegas facilities.

NRS Requirements for Plumbing Fixtures. Comply with NRS 338.193 Standards for plumbing fixtures, and verify latest edition matches the following:

1. Each public building sponsored or financed by a public body must meet the standards made applicable for the building pursuant to this section.

2. Except as otherwise provided in subsections 3 and 4, each public building, other than a prison or jail, on which construction begins on or after March 1, 1992, and each existing public building which is expanded or renovated on or after March 1, 1992, must incorporate the following minimal standards for plumbing fixtures:

(a) A toilet which uses water must not be installed unless its consumption of water does not exceed 3.5 gallons of water per flush.

(b) A shower apparatus which uses more than 3 gallons of water per minute must not be installed unless it is equipped with a device to reduce water consumption to 3 gallons of water or less per minute.

(c) Each faucet installed in a lavatory or kitchen must not allow water to flow at a rate greater than 3 gallons per minute.

(d) A toilet or urinal which employs a timing device or other mechanism to flush periodically irrespective of demand must not be installed.

3. Except as otherwise provided in subsection 4, each public building, other than a prison or jail, on which construction begins on or after March 1, 1993, and each existing public building which is expanded or renovated on or after March 1, 1993, must incorporate the following minimal standards for plumbing fixtures:

(a) A toilet which uses water must not be installed unless its consumption of water does not exceed 1.6 gallons of water per flush.

(b) A shower apparatus which uses more than 2.5 gallons of water per minute must not be installed unless it is equipped with a device to reduce water consumption to 2.5 gallons of water or less per minute.

(c) A urinal which uses water must not be installed unless its consumption of water does not exceed 1 gallon of water per flush.

(d) A toilet or urinal which employs a timing device or other mechanism to flush periodically, irrespective of demand, must not be installed.

(e) A urinal which continually flows or flushes water must not be installed.

(f) Each faucet installed in a lavatory or kitchen must not allow water to flow at a rate greater than 2.5 gallons per minute.

(g) Each faucet installed in a public restroom must contain a mechanism which closes the faucet automatically after a predetermined amount of water has flowed through the faucet. Multiple faucets that are activated from a single point must not be installed.

4. The requirements of this section for the installation of certain plumbing fixtures do not apply to any portion of an existing public building which is not being expanded or renovated.

(Added to NRS by 1991, 1168)

15412 Water Coolers & Drinking Fountains

Exterior. Finish to coordinate with project. Modified for added dog water at dog runs. No substitutions allowed. See City standard details. Use the detail connected to the sanitary sewer only where directed by the CLV project manager.

Stand Alone. Model #440DBSS, hi-lo bowl, stainless steel w/ standard powder-coated finish (color to be selected by architect), as manufactured by Most Dependable Fountains, meeting the accessibility guidelines in Division 1.

Wall Mount. Model #475 WMSS, stainless steel w/ standard powder-coated finish (color to be selected by architect), as manufactured by Most Dependable Fountains, meeting the accessibility guidelines in Division 1.

Interior. Finish to coordinate with project, typically dull chrome. Surface mount designs are preferred for cost but the consultant may also specify concealed designs. Both high and low bowl heights are required when a drinking fountain is provided. A Hi-Lo combination unit is preferred over two separate units mounted at different heights. Refrigerated models should be used in conditioned buildings and should be considered for non-conditioned buildings on a case-by-case basis.

Manufacturers. Elkay or Haws.

15700 Heating, Ventilating & Air-Conditioning Equipment

HVAC Systems.

- Include an energy management control system and temperature setup/setback control system.
- Specify a minimum SEER (Seasonal Energy Efficiency Ratio) rating of 12 for residential units 5 tons or less.
- Specify a minimum EER (Energy Efficient Ratio) rating of 11 for commercial units 5 tons or larger.
- Avoid foreign brands. They are difficult to get parts and for our crews to maintain.
- Roof mounted gas pack units are NOT allowed (due to the increased unit maintenance, difficulty in securing and reroofing around roof mounted gas lines, and the marginal benefit for our short heating season).
- No more than 3 offices on one thermostat.
- All compressors shall have a minimum of a ten-year warranty.
- Engineers should consider a central chiller boiler plant for large projects.
- The designer should investigate the use of enthalpy economizers.

Evaporative Coolers.

- Specify at least a two-speed blower motor if available for the designed installation.
- Specify a low voltage thermostat.
- A sump dump system is preferred over a bleed-off system.
- Consider ground-mounted units instead of roof top mounting.
- Provide water shutoff and drain inside the building for winterizing and a convenient electrical disconnect that is not accessible to the public. Shut off should be accessible at standing height, without a ladder.
- The unit may need to be utilized in the winter, without water, if it is the only ventilation for the space.

Duct Detectors (smoke). Specify that any required duct detectors to be supplied by the fire alarm system contractor and installed by the HVAC contractor, if any such system is being provided for the project. Each detector should be easily and separately identifiable from other detectors when activated.

Equipment Rooms. Adequate ventilation/cooling must be provided for data, security, and electrical equipment heat loads.

Protection. Provide wire guards or equal protection of thermostats and other devices in gymnasiums and recreational activity areas.

16001 Design Information - Electrical

General. This section includes general electrical information not specific to any one Division 16 section. See other Division 16 sections for additional electrical requirements. Refer to this Building Dept Clarification for discussion synopsis with the Building Department related to interpretations and discussions of typical items found to be deficient in building design related to the Electrical Code.

Low Voltage Conduit. All wiring including low voltage must be in conduit, except for direct burial irrigation controller wiring as allowed by Section 02810 Irrigation Systems.

Copper vs. Aluminum conductors.
Aluminum conductors may only be used for Nevada Power's incoming line feed to the meter. All other wiring must be copper.

Irrigation Controls. Provide isolated panel circuits for the irrigation controls.

Lighting Controls. Provide user timers with shutoff warning lights for all activity lighting such as tennis courts, skateboard areas, etc. Ball field and all general site lighting shall be controllable by City phone controlled system. Reference Section 16520 Exterior Lighting for requirements.

Lighting Levels. Interior and exterior lighting must meet minimum recognized illumination level standards for horizontal, vertical, and uniformity. Reference Section 16510 Interior Lighting and Section 16520 Exterior Lighting for the required lighting levels.

Receptacles. Do not provide convenience outlets for use by the public in restrooms or other areas except one 20 amp receptacle at maximum ADA reach height in group reservable ramadas (25 occupant minimum, which is also the minimum for lighted ramadas). This circuit needs to be controlled from a secure remote on-site location such as the restroom plumbing chase. Reference Section 02875 Site Shelters.

Conduit and Pull Boxes. Use concealed conduit in the occupied structures, restrooms, bath-houses, and park ramadas. Reference Section 02875 Site Shelters.

MC and Armored Cable is not acceptable anywhere. Flex conduit allowed only per NEC, which is only in certain locations and not more than six feet in length. Site lighting conduits may be run at a shallow depth under sidewalks as allowed by code.

Exterior. The minimum requirements for conduit and pull boxes referenced in Section 16520 Exterior Lighting of these Design Standards shall apply to all site electrical work, not just the exterior lighting, and shall be so specifically indicated on the drawings.

Interior. Specify 1" minimum conduit size for all interior homeruns, ¾" minimum size elsewhere.

Transformers and Switchgear. No electrical transformers inside buildings. Use of freestanding site pad mounted transformers and equipment is generally acceptable, and preferred over a walled enclosure that only houses the electrical equipment. Avoid placing cabinets against the outside of building walls. Placement inside block wall screen enclosures otherwise required for irrigation pumps is acceptable, possibly in combination with the dumpster enclosure.

~~**Shunt Trips.** Locate shunt trips inside steel enclosures, 16 gauge minimum, galvanized, hinged cover, padlockable, designed for exterior use, Milbank HC3R or equal. Conceal conduit, minimize the size of the box and paint the exterior to match the adjacent surface. Label the cover "SHUNT TRIP" with 1" high black letters on a yellow background.~~ http://www.milbankmfg.com/. **Shunt Trips are no longer allowed under CLV's adoption of the 2002 National Electric Code. See main disconnect below.**

Main Disconnect. An accessible main disconnect is required for all buildings and should be placed in a non-conspicuous location on the exterior of buildings or in a 1 hour rated room with outside access.
Exterior – See photo for typical example of a 400 amp fused disconnect. Whenever possible, specify a side hinged breaker type disconnect when placed on the exterior of buildings.
Interior - An exterior door to the space is required, a Knox Box must be installed adjacent to the door, the room must be 1 hour fire rated, the door must have panic hardware and be labeled on the outside, and if the panel size is 1200 amps or larger, it must have 2 exit doors (NEC Article II, 102.6).

Security for Controls and Systems.

Provide access to controls/systems for the following groups, and restrict access to all others:
Detention & Enforcement (D&E) has access to all listed.

	General Public	**City Employees** (Facility Occupants)	**Field Operations** (Facilities Management and Parks)	**Information Technologies** (IT, see Section 16742)	**Locks Provided by**	DO NOT BLOCK ACCESS **Sign Required** IF storage in front of controls is possible
Electrical Panels	No	**Yes**	**Yes**	**Yes**	Contractor, for panels in a public area (or equipment room door)	X
Time Clocks (exterior lighting)	No	**Yes**	**Yes**	No Restriction	Contractor (equipment room door)	X
Phone Board	No	No	No	**Yes**	Contractor if in a separate room, None required if in an IT wall cabinet	X
Computer Network - Patch Panel (on board separate from the phones) and **Switch/Router** (shelf or rack mounted)	No	No	No	**Yes**	Contractor if in a separate room, None required if in an IT wall cabinet	X
Video Security Camera System - Switch/Router and **Phone Line** or **Transmitter**	No	No	No	**Yes**	Contractor if in a separate room, None required if in an IT wall cabinet	X
Security System (general building intruder security - Alarmco)	No	No	**Yes**	No	Cam-locks provided and master keyed by D&E	X
Fire Alarm Panels	No	No	**Yes**	No	Provided by Contractor, master keyed by D&E	X
Access Control Panel/System/Power Supplies (for card readers & video camera / intercom systems)	No	No	No	No	Provided by vendor or D&E, master keyed by D&E	X

Note that the location of these controls may be combined in rooms by restricting access with wall-mounted cabinets (ventilated as needed and room equipment heat loads removed).

See 16742 Communication & Data Processing Equipment for wall cabinet information.
See 08710 Door Hardware for master keying of cabinets.

Protection. Provide wire guards or equal protection of lights, exit signs, detectors, speakers, assistive listening devices and other fixtures in gymnasiums and recreational activity areas. Protection must be mechanically attached so impacts will not release the protection.

Signage – Aluminum.

General. Signs shall meet the specification requirements (aluminum gauge, background sheeting, silk screening, UV coating and protective coating) as outlined in Section 10426 Signage and Graphics – Sign Specifications for On-site Regulatory – Informational – Warning Signage - Non-vehicular Signage. It is anticipated that these signs will be provided by the same supplier as the other aluminum on-site signs being provided for the project.

Electrical Meter Address Sign(s). Install identifying sign(s) adjacent to each electrical meter. CLV Project Manager shall provide actual address to be used upon application for electrical service.

- Black letters on white background.
- Text size 1" height, Arial font.
- Uniform sign size to coordinate with maximum amount of text.
- Provide attachment with double-sided stick tape over a minimum of 50 percent of the backside of the sign (3M 200MP or equal). Do not drill into or penetrate in any way the meter panel.

Main Disconnect Sign. Mount one sign adjacent to the main electrical disconnect for each structure. If the disconnect is located inside the building, provide an additional sign adjacent to the exterior door leading to the disconnect. Reference the standard drawing in this section for the sign design.

Signage – Engraved Plastic.

General. Signs shall be engraved on three-layer plastic, colors as specified, attached with double-sided stick tape (3M 200MP or equal). It is anticipated that these signs will be provided by the electrical contractor, regardless of who provides the device/box to be identified.

Electrical Equipment overall UL listed labels. NEC requires that all packaged equipment be UL rated and labeled as such for the overall unit. Providing UL listed components is not adequate. There existing different UL listing numbers for overall UL rating for different type of equipment. An example is for air compressors it is UL 1450 standards. NEC Article 110.3 (B) requires that all equipment shall be listed or labeled. Other equipment such as HVAC units etc. have specific UL numbers for overall ratings and must be specified for each piece of equipment on City of Las Vegas projects.

Electrical Identification Nameplates. Provide signs identifying all equipment, devices, switchgear, controls, equipment enclosures, communication cabinets, disconnects, main panels, sub panels, and similar electrical system components.

- White letters on black background.
- Use 1/4" letter height, except inside breaker panels use 1/8" letters for identifying individual breaker number, function, equipment and loads.
- Uniform sign size to coordinate with maximum amount of text.
- Text: Label text with common name of each piece and additionally with the unique identifier lettering shown on the as-built electrical drawings.
- Mount on or adjacent to each device for interior items. Mount on the inside of access panels for exterior located items.

Do Not Block Access Signs. Mount one sign on or adjacent to each control/system indicated in the proceeding table "Security for Controls and Systems", IF the equipment is located in a closet or storage room capable of being blocked:

- White text on red background.
- Text size 1" height, Arial font.
- Text: DO NOT BLOCK ACCESS.

Special Door Hardware Requirements.

Under certain circumstances identified in the 2002 edition of the National Electrical Code, as adopted, special door hardware requirements are prescribed for doors serving electrical equipment rooms or spaces. Such requirements are not included in the Building Code, and may not be widely known by design consultants relying strictly on the Building Code for door hardware minimum requirements. Nor will the applicability of these special requirements be apparent unless specifically identified by the electrical engineering consultant. Normally, electrical engineering consultants do not specify door hardware, so there is great potential for code non-compliance that may not be known until late in the construction when identified by governing authority code inspection unless this item is carefully coordinated by the design team. Specific reference is made to NEC 110.26(C)2 and generally applies when electrical equipment rated 1200 amperes or more is provided in a space. Familiarity with other provisions of NEC 110 related to locating electrical gear is necessary to avoid potential change orders or otherwise unacceptable design solutions.

NETA Testing. Provide the following testing requirements in all projects utilizing new electrical gear. Verify the specific project requirements with the City Project Manager. This partial specification is provided as a convenient reference to the City's intent, with the consultant's standard specification in substantially this form also being acceptable to use. Also reference additional testing requirements in Section 16520 Exterior Lighting.

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DIVISION 16 - ELECTRICAL INSPECTION AND TESTING
PART 1 GENERAL
      1.1 REFERENCES
      1.2 RELATED REQUIREMENTS
      1.3 SUBMITTALS
      1.4 QUALITY ASSURANCE
            1.4.1 Qualifications
            1.4.2 Acceptance Tests and Inspections Reports
            1.4.3 Acceptance Test and Inspections Procedure
PART 2 PRODUCTS
PART 3 EXECUTION
      3.1 ACCEPTANCE TESTS AND INSPECTIONS
      3.2 SYSTEM ACCEPTANCE
      3.3 PLACING EQUIPMENT IN SERVICE

*************************************************************************
NOTE: This specification covers electrical inspection and testing and shall be
used on project specifications where NETA testing is required.
This section shall also be used for specification sections containing low-
voltage or medium voltage generator control switchboards or switchgear,
pad-mounted air switches, and medium voltage circuit breakers. Provide the
section numbers and titles in this section, and add NETA testing requirements
to the applicable section. Coordinate the sections in your contract documents
with paragraph entitled "Acceptance Tests and Inspection" in PART 3 of this
specification.
*************************************************************************
PART 1 GENERAL
1.1 REFERENCES
The publications listed below form a part of this specification to the
extent referenced. The publications are referred to in the text by the
basic designation only.
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INTERNATIONAL ELECTRICAL TESTING ASSOCIATION (NETA)
NETA ATS (2003) Acceptance Testing Specifications
1.2 RELATED REQUIREMENTS
1.3 SUBMITTALS
****
NOTE: Submittals must be limited to those necessary for adequate quality control. The importance of an item in the project should be one of the primary factors in determining if a submittal for the item should be required.
****
The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

Test Reports
Acceptance tests and inspections;
Certificates
Qualifications of organization, and lead engineering technician;
Acceptance test and inspections procedure;

1.4 QUALITY ASSURANCE
1.4.1 Qualifications
Contractor shall engage the services of a qualified testing organization to provide inspection, testing, calibration, and adjustment of the electrical distribution system and generation equipment listed in paragraph entitled "Acceptance Tests and Inspections" herein. Organization shall be independent of the supplier, manufacturer, and installer of the equipment. The organization shall be a first tier subcontractor. No work required by this section of the specification shall be performed by a second tier subcontractor.
a. Submit name and qualifications of organization. Organization shall have been regularly engaged in the testing of electrical materials, devices, installations, and systems for a minimum of 5 years. The organization shall have a calibration program, and test instruments used shall be calibrated in accordance with NETA ATS.
b. Submit name and qualifications of the lead engineering technician performing the required testing services. Include a list of three comparable jobs performed by the technician with specific names and telephone numbers for reference. Testing, inspection, calibration, and adjustments shall be performed by an engineering technician, certified by NETA or the National Institute for Certification in Engineering Technologies (NICET) with a minimum of 5 years' experience inspecting, testing, and calibrating electrical distribution and generation equipment, systems, and devices.
1.4.2 Acceptance Tests and Inspections Reports
Submit certified copies of inspection reports and test reports. Reports shall include certification of compliance with specified requirements, identify deficiencies, and recommend corrective action when appropriate. Type and neatly bind test reports to form a part of the final record. Submit test reports documenting the results of each test not more than 10 days after test is completed.
1.4.3 Acceptance Test and Inspections Procedure
Submit test procedure reports for each item of equipment to be field tested at least 45 days prior to planned testing date. Do not perform testing until after test procedure has been approved.
PART 2 PRODUCTS
Not used.
PART 3 EXECUTION
3.1 ACCEPTANCE TESTS AND INSPECTIONS
Testing organization shall perform acceptance tests and inspections. Test methods, procedures, and test values shall be performed and evaluated in accordance with NETA ATS, the manufacturer's recommendations, and paragraph entitled "Field Quality Control" of each applicable specification section. Tests identified as optional in NETA ATS are not required unless otherwise specified. Equipment shall be placed in service only after completion of required tests and evaluation of the test results have been completed. Contractor shall supply to the testing organization complete sets of shop drawings, settings of adjustable devices, and other information necessary for an accurate test and inspection of the system prior to the performance of any

final testing. City Representative shall be notified at least 14 days in advance of when tests will be conducted by the testing organization. Perform acceptance tests and inspections on applicable equipment and systems specified in the following sections:

****

NOTE: Select applicable sections for each project. Ensure each equipment section includes the following information.

1. NETA ATS listed in the references.

2. The words "and Section 16..., "Electrical Inspection and Testing" apply" added to paragraph entitled "Related Requirements."

3. Submittals with "Acceptance checks and tests" added in PART 1.

4. Appropriate paragraphs from the NETA manual added under "Field Quality Control" in PART 3.

5. Add any job section numbers and titles containing low-voltage or medium voltage generator control switchgear or switchboards, pad-mounted air switches, or medium voltage circuit breakers. Provide the NETA tests required in the applicable section.

****

[Section 16... SINGLE-OPERATION GENERATOR SETS. Functional engine shutdown tests, vibration base-line test, and load bank test shall not be performed by the testing organization. These tests shall be performed by the start-up engineer.]

[b. Section 16... THREE-PHASE PAD-MOUNTED TRANSFORMERS]

[c. Section 16... SINGLE-PHASE PAD-MOUNTED TRANSFORMERS]

[d. Section 16... OVERHEAD TRANSMISSION AND DISTRIBUTION]

[e. Section 16... UNDERGROUND TRANSMISSION AND DISTRIBUTION]

[f. Section 16... PAD-MOUNTED SF6 INSULATED INTERRUPTER SWITCHES]

[g. Section 16... SECONDARY UNIT SUBSTATIONS]

[h. Section 16... PRIMARY UNIT SUBSTATIONS]

[i. Section 16... AUTOMATIC TRANSFER SWITCHES]

[j. Section 16... SWITCHBOARDS AND SWITCHGEAR]

3.2 SYSTEM ACCEPTANCE

Final acceptance of the system is contingent upon satisfactory completion of acceptance tests and inspections.

3.3 PLACING EQUIPMENT IN SERVICE

A representative of the approved testing organization shall be present when equipment tested by the organization is initially energized and placed in service.

-- End of Section --

16510 Interior Lighting

Lighting Motion-Sensing Controllers. All building rooms should be considered for motion-sensing light controllers as an energy saving feature. Consider how often and how the room is utilized in determining if such a controller is worth the expense for the energy savings; always install in offices. Consider using zoned motion sensors to control the lighting in common areas.

Manufacturer. Specify Hubbell-UNENCO sensors only, no substitutions allowed (Facilities stocks the most common ones for immediate replacement), wall or ceiling mount, consider daylight override, dimming and dual switching. http://www.hubbell-automation.com/

Locking Wall Switches. Provide locking wall switches for all light switches located in areas where inappropriate switching by the public is possible and where lighting control by authorized personal only is required.

Manufacturer. Specify Leviton Single-Pole Locking, Double-Pole Locking, model series 1201-2L, 1221-2L, 3031-2L, 1202-2L, 1222-2L, 3032-2L as appropriate to the condition, no substitutions allowed (Facilities stocks 1221-2L 20 Amp Single-Pole Locking switches, which should be specified whenever possible).

Provide 10 Locking Switch Keys, Leviton 55500-PRT, per building to the Owner. Place one key in each Fire Department Knox Box. (Leisure Services and Facilities prefer all wall switches keyed the same throughout City facilities, and the City locksmith does not require these to be master keyed to the City key system.)

Public Restrooms. For public restrooms located in buildings, either install locking switches or motion sensors. If using locking switches, verify with the building operators that someone will be responsible for turning the switch on and off each day. When using motion sensors, wire some light fixtures to remain on at all times the building is occupied so people do not have to enter a dark room to activate the motion sensor.

Light Fixtures. The City stocks T8 lamps for ceiling fixtures, although other lamps may be specified if justified. The City does not have a standard lay-in ceiling fixture although Lithonia SP is common. Specify electronic ballasts (20% THD).

Gym Lighting. Specify lamp protection from balls, mechanically fastened (no spring clip designs), with safety straps. Unless otherwise directed, gymnasiums require dual lighting levels to accommodate various uses.

Exit Signs. Specify LED type, green unless matching existing color.

Lighting Levels. Provide the following maintained horizontal foot-candles of light in the activity areas (measured without daylight; maintained after 100 hours).

	Where Measured	Average	Allowable Range	Standard Derived From:
Arts & Crafts:	table level	75 Fc	50-100 Fc	Site Measurements
Art Gallery:	bench height	35	17-52	Site Measurements
Classroom:	desk level	60	40-80	Site Measurements
Computer Room:	desk level	60	30-90	Site Measurements
Conference Rooms:	desk level	60	30-90	Site Measurements
Dance Rooms:	floor level	60	30-90	Site Measurements
Game Rooms:	table level	60	30-90	Site Measurements
	Extra lighting required over pool tables, foosball tables, air hockey, card tables, etc.			
Green Rooms:	counter height	35	17-52	Site Measurements

Gymnasiums:	floor level	50	25-75	IESNA Lighting Handbook Class III (Basketball)
Gymnastics:	floor level	50	25-75	IESNA Lighting Handbook Class III
Halls:	floor level	15	5-25	Site Measurements
Kitchen:	counter level	75	50-100	Site Measurements
Lobby:	counter height	35	17-52	Site Measurements
Martial Arts Rooms:	floor level	45	22-67	Site Measurements
Pool	deck level	30	20-40	IESNA Lighting Handbook Class III (See NAC 444.142)
	pool surface	15 candelas 3:1 per sq meter		IESNA Lighting Handbook Class III /public_bathing.pdf
Restrooms:	counter height	35	17-52	Site Measurements
Weight Rooms:	equipment level	60	30-90	Site Measurements

For other uses not indicated above, design to values recommended in the IESNA Lighting Handbook-2000 and best practice.

Seniors: Provide additional lighting levels beyond the above standards for activity areas used by seniors.

Facility lighting survey from February 2004: LightingSurvey.xls

16520 Exterior Lighting

Light Fixture Type.

Provide Metal Halide (MH) fixtures in any outdoor activity area requiring accurate color including swimming pools, performance stages, flag lighting, group picnic shelters and also, when they are scheduled to be lighted, sports fields, tennis courts, skateparks, bocce courts, athletic activity areas, tot lots, splash pads and similar areas.

Provide Metal Halide (MH) or High Pressure Sodium (HPS) fixtures for pedestrian pathways, parking lots and other general site lighting. Note that HPS light levels are required to be twice that of MH.

Building flood/wash, landscape up lighting and exterior exitway fixtures attached to the building may be either MH or HPS to coordinate with the over all lighting design.

The site lighting within larger complexes, such as the city service yards, needs to continue specifying high pressure sodium to match the existing lighting.

Monument Signs. Do not provide lighting for the city's standard precast park name monument signage. Building or facility monument signs will likely require lighting; verify requirements with city project manager.

Flagpole Lighting. Reference Section 10350 Flagpoles for requirements.

Landscape and Building Up/Flood/Wash Lighting. Do not place fixtures in sidewalks, concrete flatwork, or pedestrian areas. Fixtures must be low temperature and vandal resistant, which specifically includes the lens material, fixture housing, fixture support and providing lens stone guards if available.

Exterior Emergency Power Egress Illumination. The city does not normally provide emergency powered illumination for the exit discharge pathway to the right-of-way. Verify requirement with the city project manager for your project. Note that the building department has taken the interpretation that the required exterior emergency powered illumination in the area of the exit must continue until one is no longer under a rooftop, covered patio, overhang or similar building projection.

Site Lighting & Electrical. (Pedestrian pathways, parking lots, etc.)

Note: The City of Las Vegas, Department of Building & Safety "Bolted Light Pole Base Detail" sometimes issued with its plan review comments does not meet the following design standards. The consultant must provide adequate detail and structural calculations for light pole foundations meeting the below standards.

Note: The City of Las Vegas, Planning & Development Department standard conditions for the Site Development Review limit lighting poles to 20 feet high. There may be situations were a variance to this standard will be requested. Consultant needs to verify such situations with the City project manager.

Foundations (see Section 03001 for additional requirements).

- In parking areas, extend 30 inches above finish grade, with rebar cage.
- For pathway and area lights, extend 12 inches above finish grade.
- Pour entire base in one pour to base plate (no grout capping and shaping later).
- Bare #4 cu wire to ground pole and all anchor bolts.
- Extend anchor bolts 1 inch of thread above nut.
- Provide matching metal crash cap.
- Use 3000-psi minimum concrete.
- Add the following note to the drawings: "Pour entire base in one pour to base plate and slope top away from pole. Strip Sonotube forms off while concrete is still green (approximately four hours after pour) and stone rub to provide a smooth, seamless

surface appearance, and then a light broom finish. Wet cure base for seven days. Attempts to fill and shape poured bases will not be allowed; improperly poured bases must be demolished and repoured."

- BUILDING AND SAFETY will only accept twenty feet of copper wire for grounding.

Poles.

- Provide manufactured poles of a minimum size that allows for and specifies a manufactured minimum access hand hole of 4 inches by 6-1/2 inches. The access hand hole may have radius corners such that the hand hole is oval in shape. Access hand hole reinforcement shall provide a bending strength equal to that of the pole without an opening. Field cutting, welding, or other adjustments of the access hole will not be allowed. This minimum hand hole size shall be provided regardless of the required pole height or usage. (This often requires specifying a larger diameter pole than may otherwise be required for loads.)

- Provide a minimum of 15 feet high, 6-inch minimum diameter.
- Install pole plumb using leveling nuts, no shims.
- Extend wires 18 inches out of hand hole.
- Specify steel poles, no aluminum.
- Hand hole cover shall be stainless steel tamper proof bolted.

Light Fixtures.

- High Pressure Sodium lamps (or Metal Halide see above).
- Use #10 UF with ground wire to each fixture.
- Provide a fuse holder for each fixture in base of pole, Buss with a 10A fuse.
- Use a single fuse holder for 120v or 277v.
- Use a double fuse holder for 208v, 240v or 480v.
- Fuse holders shall have #10 cu stranded THW wire on line side. Connection to feed wires shall be with a split bolt. No wire nuts.
- Level all fixtures.

Time Clock and Photocells.

- All lighting set for dusk to dawn will be controlled by photocell facing north.
- Photocell to be mounted on nearest pole to service.
- Provide a photocell by-pass switch at the service.
- Specify photocell Tork 2007, no substitutions.
- All lighting set for dusk to park/facility closing will be controlled by a photocell on and a time clock off.
- Specify time clock Intermatic ET70115C, no substitutions.

Service Pedestals.

- 200A service to be fed by three #3/0 cu THW wires minimum.
- 125A service to be fed by three #1/0 cu THW wires minimum.
- Bare cu ground wire shall be continuous to neutral buss.
- A photo eye by-pass switch shall be mounted in the service and marked on/off.
- All splices on by-pass shall be crimp type and taped. No wire nuts.
- One wire per breaker.

Pull Boxes. (Also applies to all site electrical.)

- All pull boxes in grass, dirt or asphalt shall have an 8-inch minimum concrete collar with #4 rebar.
- All boxes 2' by 3' and larger shall have torsion assisted lids.
- Covers shall be factory imprinted "Lighting" or "Electric".
- Conduits shall be 3 inches above the bottom of the box.

- Splices shall be waterproof with split bolt, rubber tape, vinyl electrical tape and 3M Skotchkote Electrical Coating or approved equal.
- Secure lids with brass tie downs.
- Lids shall be an approved non-metallic Polymer type material (no concrete, no metal, no Fiberlite, no other materials – no substitutions, including traffic areas).
- Wires shall extend 24 inches outside of box.

Conduit. (Also applies to all site electrical.)

- Shall be 1-1/4 inches or larger in size, PVC Schedule 40.
- Specify all exterior conduit at least one standard size larger than that required by code. The City project manager may waive this requirement during the design if this larger size conduit requires a larger or nonstandard light pole or other terminating device/fixture for a proper termination.
- Extend conduits continuous through and above pole bases to within 3 inches below bottom of pole hand hole.
- Conduits shall be placed to a depth of not less than 24 inches below finished grade.
- Vinyl warning markers shall be placed above conduits at 12" below the ground surface.
- Conduit runs shall have no more than 270 degree bends (two 90 and two 45).
- Conduit runs shall not exceed 300 feet between pull boxes.
- A polyester pull tape having a continuous durable footage markings, with a min, 1,200 lbs of pull strength, shall be installed in each completed conduit run.
- Conduits shall be proven free and clear of dirt and debris by use of an appropriately sized mandrel no less than ¼" smaller than the inside diameter of the conduit.
- Natural backfill shall be free of stones, caliche, or lumps of material exceeding 3" and free from sod, frozen earth and organic materials.

Additional spare conduit for future camera surveillance (verify when required).

- Provide a 2" conduit with pull string running from the electrical room to a light pole on the street side of the building. Verify with the City of Las Vegas the location of the pole. Cap and identify as future surveillance.
- Provide a 2" conduit with pull string running from the electrical room to a light pole on the back side of the building. Verify with the City of Las Vegas the location of the pole. Cap and identify as future surveillance.

Additional spare conduit for other future uses.

- Provide 2-1" conduits with pull strings running from the electrical/phone room to 5 feet outside the building. Cap and identify as spares.

Wire and Splices.

- Use THW cu wire only.
- No wire smaller than #10 cu.
- Wire size #6 and smaller shall be continuous in color. No phase tape.
- All connections shall be with a split bolt, no wire nuts.
- Fuse holders shall have two crimps and rubber boots.
- Wire will be sized to prevent a voltage drop exceeding 3 percent at the farthest lighting load.

The City's TEFO Section, 229-6331, has provided the above standards in this Site Lighting & Electrical section.

User Controlled Activity Lighting in Parks (Skateparks, tennis courts, basketball courts, bocce ball courts, etc.)

Provide for lighting of park activities for night use only when specifically requested by the City. User controlled lighting systems are to be provided on dedicated electrical circuits and in no way share circuits with the irrigation controller system.

Electronic Time Switch. ET70115C by Intermatic Incorporated, no substitutions. Used to coordinate the lighting available times with the hours of darkness and park hours. One timer may control multiple user-controlled activities. Must be mounted in a remote secure location such as a park restroom plumbing chase, locked switchgear cabinet, or locked booster pump enclosure. A locked pedestal cabinet is NOT acceptable. A remote location is critical since any equipment in the area of the lighting will be thoroughly investigated by the users trying to keep the lighting on beyond park closing.
http://www.intermatic.com/comind/et70000c.htm

General Purpose Timer. 9050 JCK70 V20 by Square D (Schneider Electric), no substitutions. Used to program and control the user controls. Same secure remote location mounting requirements as the Electronic Time Switch.
http://www.squared.com/us/products/relays.nsf/07a0210021262d45862564b5006e4f84/f04a58b2c4495d0c85256650005fb668/$FILE/9050CT9601_R8-00.pdf

Push Button. MPB.02-ADA by McCain Traffic Supply, no substitutions (ADA 2" pushbutton with 9"x12" integral sign above, custom text, adjustable diameter back mounting). Used by the user to turn on the lights for the activity. Mount button at 40 inches above the finished surface, weather tight, on the side of the light pole specified below.
http://www.mccaintraffic.com/products/signal14.html

Warning Light. JB10G with Red Polycarbonate Globe VPG-1RE by Appleton Electric Company, no substitutions. Locate on top of the light pole specified below, weather tight.
http://www.appletonelec.com/

Pushbutton/Warning Light Pole. Valmont CA 1A or equal, freestanding pole per Regional Transportation Commission of Clark County (RTC), Uniform Standard Drawing Volume 2, Section 404 Traffic Signals, Drawing 404.402, 10'-0" high pole, 3" x 6" hand hole, adjacent pull boxes NOT allowed. Pole to be provided primed and finish painted to coordinate with the park colors. (Note: Disregard note 3 on drawing 404.402 and use the button height and reach dimensions shown here or in the proposed Federal Access Board Right-Of-Way requirements, whichever are more restrictive.) http://www.valmont.com/asp/poles/poles2.shtml

Location. Pole must be located along and accessible from the on-site ADA accessible path to the activity. Push button shall be located adjacent to a clear level landing, and provide for an 18 inch maximum SIDE reach only (no front reach). Pushbutton location must provide for the continuing usage by all users of the activity being lighted, without interrupting the other users. Warning light must be visible by all users. Pole location must not interrupt the normal play of the activity nor be a potential hazard, including the signage edges. The pole location may be integrated into the face of a fence line (such as a tennis court enclosure) as long as the other design criteria are maintained.

Lighting Instructions Signage Reference drawings in this section for the following signs (see section 10426 for additional mounting requirements):

- User Controlled Lighting. Locate one sign at each user controlled lighting push button.

Sports Field Lighting.

General. Use an open performance specification, although the performance required by these standards and the project parameters may limit the number of known manufacturers. Specify that the manufacturer and contractor warranty lamps for 2 years and entire field lighting system (except lamps) for 10 years. All steel components shall be hot-dipped galvanized inside and out, with proper separation to other materials to prevent galvanic action. Specify two spares of each type and wattage of lamp and ballast installed.

Energy Efficient Fixtures. Include provisions in the specifications for energy efficient fixtures per the attached criteria, click here to view.

Fields Near Residential. Following the criteria for how to handle fields near residential property lines where traditional sport floodlights may have a problem meeting the requirements for spill, glare, etc., click here to view.

Manufacturer. Lighting system manufacturer shall submit in writing a minimum of five similar lighting projects in the State of Nevada where the specifications outlined have been met (project name, contact person and telephone number), and evidence that they are a company specializing in manufacturing such lighting systems for at least the last three years. The Owner may entertain reviewing this pre-qualification process during the bidding period, up to 10 days prior to bid opening, in order to clarify for bidders the acceptable manufacturers to utilize in their bids. Verify with the City Project Manager for each project whether to include pre-qualification in the specifications (currently the City Purchasing & Contracts Section is opposed to pre-qualifications in general). The standard 10-day substitution period required by NRS and stated in the General Conditions would still apply.

Poles. All poles shall be steel bolt down design, sealed top, weather-tight. Mount ballasts on light pole 15 feet above grade, and provide for truck access to poles. Dimension the horizontal location of each pole on the drawings. Provide lightning protection meeting NFPA 780. Do not specify poles taller than 80 feet without consulting with the City's TEFO Division.

> The City maintains its Sports Field Lighting with the use of an 85-foot boom truck. The 85 feet is measured from the ground to the bottom of the platform when fully extended. It is desired that the boom truck is able to back up to the base of the pole from the lamp side (field side), both sides of the pole for double masted arrangements. The boom truck is a double axle 35-foot long vehicle, 11 feet high with the boom in the travel position. Access to the fields must be able to accommodate this vehicle. Avoid planting major trees in near vicinity to the Sports Field Lights in order to reduce boom access. **The weight of the boom truck is 50,000 lbs. Design hardscape features such as sidewalks that provide a boom truck path to sports lighting to support such a load.**

Pole Foundations (ballfield lights only).

- In parking areas, extend 30 inches above finish grade.
- In pedestrian sidewalk areas between or adjacent to fields, extend 30 inches above finish grade.
- In landscape areas, extend 12 inches above finish grade.

Fixtures. Metal Halide lamps. Consider using controlled optic sports lights instead of traditional round symmetrical floodlights with louvers particularly where light spill is an issue.

Light Trespass. The lighting design shall meet the following minimum light trespass restrictions. Ambient light levels may be subtracted from each test station in meeting the respective foot-candle spill readings.

> Spill Light. Maximum allowed spill light along all residential property lines:
> .15 Fc Horizontal Maintained
> .3 Fc Vertical Maintained (meter aimed toward light bank at five feet above grade)
>
> Glare Analysis. Designer will review candlepower curves and determine the appropriate luminaire

mounting height and optical system so that no greater than 12,000 candlepower from any given luminaire is visible from residential property lines. All luminaire aiming points, pole locations, and number of fixtures on each pole, fixture types and NEMA beam patterns shall be shown on the drawings.

Sky Glow. The lighting level above the light fixture shall not exceed five percent of the maintained, calculated average lighting level on the field surface to reduce sky glow.

Egress Illumination. When designing field lighting, also provide a secondary lighting system to allow a safe and ADA legal pathway(s) from the playing fields and spectator areas to the parking areas with power supplied by the premises' electrical supply, to provide for player and spectator exiting should the field lighting system fail during an event.

Controller. Sports field lighting is controlled via the City's standard MUSCO Lighting "Control-Link" Wireless Control System, no substitutions or exceptions.

MUSCO Local Representative: Shane White, 801-446-8391, Cell 801-201-2536.

MUSCO Sports Lighting, Inc.
Corporate Office: 100 1st Avenue West, P.O. Box 808, Oskaloosa, Iowa 52577,
800-825-6030
West Regional Office: 800-659-0117, Fax 714-540-9344
www.musco.com

Provide connection to the on-site controller through a phone modem via a dedicated phone line connection. Design the system so that each field can be lighted separately. The City Project Manager will make the service application for this dedicated phone line connection, and the monthly service charge paid by the City. (MUSCO has discontinued the option of a cell phone connection at the site modem currently in use at many facilities. Any continued use of the existing cell phone connections must be digital.)

The City does not utilize the following available options: wireless satellite control (satellite dish), on-site schedule override cabinet (user control for early turn-off), or remote manual switch cabinet (switches located other than at the switchgear cabinet location).

MUSCO equipment cabinets shall be mounted inside lockable electrical switchgear cabinets adjacent to the incoming electrical switchgear.

The City will utilize its current PC hardware and software setup for controlling via the PC/Internet access method.

Click here for links to a MUSCO standard specification, modified for City options, and literature on the system.

The following crossed-out specification is listed here for reference only. This was the City's previous field lighting controller standard, which may be encountered on renovation projects.

~~Sports field lighting is controlled via a dedicated phone line to the City's standard Theta Labs LC-2 controller system with one zone for each field, no substitutions allowed (Theta Labs, Inc., 10040 Monroe Dr., Dallas, TX 75229, available locally through Custom Controls of Nevada, 4535 W. Russell Road, #2, Las Vegas, NV 89118, 702-362-1350, Fax 702-362-1337, www.ccnlv.com). A controller cabinet needs to be located in a secure accessible location such as the plumbing chase of a park restroom. Specify a weather-proof cabinet if exterior mounted. The City is not currently utilizing the warning horn feature of the controller.~~

~~Click here for a technical description of the LC-2. (Note that this technical description contains~~

~~sample language for usage on tennis courts. Typically the City utilizes a different system for controlling tennis court lighting, NOT the LC-2 controller, see below. Comply with the specific lighting instructions and requirements for your particular project.)~~

Testing. (Applies to all Site Lighting including User Controlled Activity Lighting and Sports Field Lighting)

Prior to completion of the work, the Contractor shall cause the following tests to be made on all lighting circuits, in the presence of the Owner's design Consultant:

(a) Test for continuity of each circuit.
(b) Test for grounds in each circuit with a 500-volt megohmmeter with a minimum acceptable reading of 200 megohms.
(c) A functional test in which it is demonstrated that each and every part of the system functions as specified or intended herein.

Following construction, the Owner's design Consultant shall provide the following testing and report:

(d) The Consultant shall measure and record all illumination levels (including spill light restrictions) in accordance with IESNA LM-5 at nighttime without moon. Measurements need to be taken after 100 hours of operation to determine maintained levels. If the measurements do not meet the specified standards, the Consultant will determine which adjustments need to be made and re-measure the levels after the adjustments are made. A 1:30 or larger drawing of the field being illuminated with 10 foot spaced grid points shall be delivered to the Owner. Spill light will be measured at 20-foot intervals, 5-foot above grade and shown on the drawing. The initial and maintained lighting level at each grid point shall be shown on an accompanying chart. The chart will also summarize the average and range of the lighting levels. The Consultant shall provide these documents and a letter of compliance to the Owner.

Lighting Levels. Provide the following maintained horizontal foot-candles of light in the activity areas (measured at night without moon; maintained after 100 hours). Lighting levels may be upgraded to Class III levels for projects designed for tournament play.

The light spill requirements along residential property lines shown above for Field Lighting applies to all projects, regardless of whether there are field lights.

	Average Horz. Footcandle	Max. to Min. Allowable Range	Standard Derived From
Baseball Infields	30 fc	48 to12 fc	IESNA Lighting Handbook, Class IV
Baseball Outfields	20	32 to 8 fc	IESNA Lighting Handbook, Class IV
Basketball Court	20	32 to 8 fc	IESNA Lighting Handbook, Class IV
Bocce Ball Court	20	32 to 8 fc	IESNA Lighting Handbook, Class IV
Dog Run Walks	2 if HPS 1 if MH	4:1 ratio 4:1 ratio	IESNA Lighting Handbook, Figure 22-10
Football Fields	20	32 to 8 fc	IESNA Lighting Handbook, Class IV
Hockey, Roller	20	32 to 8 fc	IESNA Lighting Handbook, Class IV
Horseshoe Pits	20	32 to 8 fc	IESNA Lighting Handbook, Class IV
Walking (Jogging) Paths	2 if HPS 1 if MH	4:1 ratio 4:1 ratio	IESNA Lighting Handbook, Figure 22-10
Parking Lots	2 if HPS 1 if MH	15:1 ratio 5:1 avg. to min. ratio 15:1 ratio 5:1 avg. to min. ratio	2 fc is from a lawsuit at Sam's Town IESNA Lighting Handbook, Figure 11-21 footnotes 2 and 3
Tot-lot/Splash Pad	20	32 to 8 fc	Site measurements
Pool Deck	30	48 to 12 fc	IESNA Lighting Handbook, Class IV
Pool Surface	15 candelas per sq meter	4:1 ratio	IESNA Lighting Handbook, Class IV
Ramada	10	15 to 5 fc	Site measurements
Restroom, Inside	20	30 to 10 fc	Site Measurements
Restroom, Outside	5	10 to 2 fc	Architectural Graphic Standards (Building entrances)
Sidewalk	2 if HPS 1 if MH	4:1 ratio 4:1 ratio	IESNA Lighting Handbook, Figure 22-10
Skate Park	20	32 to 8 fc	IESNA Lighting Handbook, Class IV (Similar to Roller Hockey)
Soccer Fields	50	4:1 ratio	IESNA Lighting Handbook, Class IV
Tennis	50	80 to 20 fc	IESNA Lighting Handbook, Class IV
Trail	2 if HPS 1 if MH [.5 if away from streets & other light sources, IESNA DG-5-1994, Table 2]	4:1 ratio 4:1 ratio	IESNA Lighting Handbook, Figure 22-10
Trail in Tunnel	5	4:1 ratio	IESNA Lighting Handbook, Figure 22-10
Volleyball	20	32 to 8 fc	IESNA Lighting Handbook, Class IV (Similar to Bocce and Horseshoes)

For other uses not indicated above, design to values recommended in the IESNA Lighting Handbook-2000 and best practice.

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16742 Communication & Data Processing Equipment

Reference Section 13700 "Security Access and Surveillance" for telephone backboard, modem and other related requirements.

Communication & Data Standards

Project documents are to include a complete system including all wire pulls and jacks, except as specifically stated herein.

[Modular Building Exception: The only exception is when constructing modular factory built buildings, in which case the conduit runs are to be provided by the modular manufacturer, with the City Department of Information Technologies contracting to provide all wire pulls and jacks. This is due to the nature of the modular being pieced together on-site, making factory wire pulls and splicing difficult. The project budget must provide for funding this separate wiring contract, generally estimated at $4,000 per modular.]

The following information is provided by the City Department of Information Technologies:

1. Work Station (drop).

A. 2 Phone Jacks & 2 Data Jacks per Workstation
B. Phone Wire - Cat. 3, 4/24 UTP (AT&T) *
C. Data Wire - Cat. 6, 4/24 UTP (Commscope Ultramedia 75N4 Blue)**
D. Phone Jack - Hubbell HXJUGY*
E. Data Jack - Hubbell HXJ6B (T568B)**
F. Wall Plate - Hubbell IMF1W frame w/ (2) IM2KA15W modules or Hubbell AFP14W

G. Conduit - ¾" min. drop size
   a. 1" H.R.- max. 3 drops
   b. 1¼" H.R.- max. 5 drops

H. Outlet Boxes – Outlet boxes installed in existing walls (cut-in boxes) for the purpose of terminating Cat. 6 cables, shall be DOUBLE GANG, to provide adequate minimum bend radius.

* Phone Jack Wiring Color Codes

	Cable Colors	Jack#1	Jack#2
a.	White/Blue	White/Blue	
b.	Blue/White	Blue/White	
c.	White/Orange	White/Orange	
d.	Orange/White	Orange/White	
e.	White/Green		White/Blue
f.	Green/White		Blue/White
g.	White/Brown		White/Orange
h.	Brown/White		Orange/White

** Some installations will require that new wiring be installed to match existing. In such cases, Cat. 5E Commscope 55N4R (NOT BLUE) UTP cable & Black Hubbell HXJ5EBK data jacks will be used and tested to Cat. 5E standards.

2. General.

A. The work covered by this section includes, but is not limited to, furnishing and installing a telephone and data wiring system as specified herein.

B. The installation shall include UTP cable (unshielded twisted pair copper), connectors (copper), jumpers (twisted pair copper), wiring blocks, telecommunications outlets and any other equipment necessary for a complete system. Contractor shall provide labor and any incidental material required for installation. All copper station cables shall be terminated on patch panels (MDF end) and data communications outlets (work station end). All copper backbone cables shall be terminated on wiring blocks at each end. Upon completion of installation, Contractor shall test all copper pathways and record the test results, as specified in the following.

C. The work performed under this specification shall be of good quality and be performed in a workmanlike manner. In this context, "good quality" means the work shall meet industry technical standards and have a quality appearance. The City of Las Vegas reserves the right to reject all or a portion of the work performed, either on technical or aesthetic grounds.

D. All new or newly renovated facilities shall accommodate Telephone & CATV entrance concerns with a minimum of two (2) two inch (2") conduits w/ large radius bends and pull strings, to the Main Telephone Board (TTB) location. In addition, a three quarter inch (3/4") fire retardant plywood backboard (unpainted so Building & Safety can inspect the material), size commensurate to the site's telephone, data, CATV, fire and intrusion alarm requirements, will be installed; along with a #6 ground wire long enough to reach anywhere on the backboard (TTB).

3. Applicable Standards.

A. EIA/TIA-569A-"Comercial Building Standards for Telecommunications Pathways and Spaces".

B. EIA/TIA-568A-"Commercial Building Telecommunications Cabling Standard".

C. EIA/TIA-TSB-36-"Technical Systems Bulletin, Additional Cable Specifications for Unshielded Twisted-Pair Cables".

D. EIA/TIA-TSB-67-"Transmission Performance Specifications for Field Testing of UTP cabling systems".

E. EIA/TIA-607-"Commercial Building Grounding and Binding Requirements for Telecommunications".

F. EIA/TIA-606-"Administration Standards for Telecommunications Infrastructure of Commercial Buildings".

G. All cabling systems, either conforming to this standard or deviating form this standard, must be proposed in writing and be approved by the City of Las Vegas.

H. NEC-National Electric Code, Chapter 8.

I. Local and National Building and Electrical codes.

4. Contractor Qualifications.

A. In order to qualify for installation of the data communications system, Contractor must possess the required license classification, a performance history and a minimum of two (2) years experience in the installation and termination of Category 6 UTP and Fiber Optic Systems. Certifications of training shall be presented with the submittals.

5. Definitions.

A. Main Distribution Facility (MDF): The MDF is the location(s), within a building, where the entire telecommunications system originates. It may include: the physical location, enclosure, wire and cable management hardware, termination hardware, distribution hardware and equipment racks. The MDF shall be located with the telephone utility demarcation point.

B. Backboard: Backboard generally refers to the plywood sheeting lining the walls of telecommunications facilities. Backboard may also refer to the entire wall-mounted assembly, including wire management, wiring blocks and equipment racks.

6. Submittals.

A. Provide 1/8" scale drawings indicating point-to-point wiring requirements, elevations of racks and equipment.

7. Products.

A. Throughout this specification, Hubbell and other manufacturers are cited, along with specific part numbers. These citations are for the purpose of establishing quality and performance criteria.

B. Unless specified otherwise, in the following, the equipment furnished shall fall into six (6) classes, and with the exception of class four, all of the material within a single class shall be the standard product of one (1) manufacturer. The six (6) classes are as follows:

a. Class One: Copper cable, copper jumpers, interconnection devices, connectors (copper), and wiring blocks. All material covered in Class One shall be equal in quality and performance to that manufactured by AT&T/Lucent.

b. Class Two: Nineteen by eighty four inch (19"x 84") Equipment racks. All material covered in Class Two shall be equal in quality and performance to that manufactured by Hubbell, as required.

c. Class Three: Communications Cabinets, Patch Panels, Wire Management Panels and Communications Outlets (jacks). All material covered in Class Three shall be manufactured by Hubbell.

d. Class Four: Wire ties, labels, "D" rings, nuts, bolts, screws and other miscellaneous hardware.

e. Class Five: Category 3 UTP shall be 4 pair cable, 24 AWG, solid copper, unshielded twisted pair, manufactured by AT&T/Lucent.

f. Class Six: Category 6 UTP shall be 4 pair round cable, 24 AWG, solid copper, unshielded twisted pair, Blue Ultramedia 75N4, manufactured by Commscope.

8. Equipment Racks.

A. Floor standing racks are preferred for data equipment, but when space considerations do not allow for the use of a rack, provide a backboard and Hubbell RE4X wall cabinet, no substitutions allowed. It comes with a NSQ tool that is used to turn recessed bolts in the door and does not require a keyed lock for security.
http://www.hubbell-premise.com/Pdf/Catalog/CABINETS/REBOX.PDF

B. Reference Section "16001 Design Information – Electrical", "Security for Controls and Systems" of these Design Standards for security information on controls, racks, wall cabinets, and their location/security relationship to other facility controls.

C. Equipment racks shall be assembled in accordance with the manufacturer's instructions and recommendations.

9. Wire Management Components.

A. Where required, patch panels and wire management components shall be mounted to the equipment racks or the plywood backboard. Each device shall be mounted such that its horizontal dimension is level. In cases where more than one device is mounted, they shall be aligned vertically. A minimum of four (4) of the mounting holes provided shall be utilized for fastening. Screws shall be tightened to the extent that they hold the device snug to the rack or backboard, but not so tight as to damage the device. Patch panels shall be terminated in accordance with the manufacturer's recommendations. Installation of accessories shall be conducted in accordance with the manufacturer's instructions and recommendations.

10. Copper Cable.

A. Where copper cable enters MDF, it shall be affixed to the rack or backboard via "D" rings and cable ties. All cable runs, within the MDF, shall be horizontal or vertical while maintaining the minimum cable bend radius.

11. Labeling.

A. All labels shall be machine printed on clear or white tape, stenciled onto adhesive labels or typewritten onto adhesive labels. The font shall be at least one-eighth inch (1/8") in height, block characters and legible. The text shall be of a color contrasting with the label such that it may be easily read. If labeling tape is utilized, the font color shall contrast with the background. Patch panels shall exhibit workstation jack numbers, in sequential order, for all workstations served by the MDF. A numbering scheme will be approved by the City of Las Vegas, prior to labeling.

12. Combination Voice/Data Outlets.

A. Provide two (2) RJ-11 jacks for voice and two (2) RJ-45 jacks for data at each combination voice/data outlet. The RJ-11 voice jacks shall be wired according to the USOC standard and the RJ-45 data jacks shall be wired to the EIA/TIA T568B standard. All installation/termination of cabling shall comply with code as specified by the EIA/TIA Standards Documents pertaining to the category of cable being installed. Faceplates shall be Hubbell, white, with a minimum of four (4) jacks. Identification of the jacks shall be Gray for voice and Blue for data.

13. Workstation Cable.

A. Description: From the MDF, provide two (2) 4 pair, 24 AWG, Category 6 UTP cables and (1) 4 pair, 24 AWG, Category 3 UTP cable to each workstation/office served by the MDF.

B. Installation: Installation shall be conducted in accordance with guidelines established by the product manufacturer and industry standards. Wall plates shall be mounted such that their vertical dimension is plumb. Each wall plate shall be labeled with appropriate Voice & Data jack numbers.

C. Patch Cables: Two (2) Blue Hubbell Category 6 patch cables shall be provided for each workstation served, one (1) 6' and one (1) 12'.

14. Building Interconnect Wiring/Fiber.

A. Provide a minimum of six (6) pairs of fiber optic cable to be pulled between buildings and to each phone closet and left terminated to patch panels in equipment racks and labeled according to EIA/TIA 606 standards as closet interconnects.

B. Depending on the requirements of the location in question, any combination of the following types of fiber optic cable & connectors may be specified:

a. Singlemode Fiber w/ ST or Yellow SC connectors
b. 50/125 Multimode Fiber w/ Orange SC connectors
c. 62.5/125 Multimode Fiber w/ ST or Blue SC connectors

C. Fiber connectors shall be affixed using Epoxy & Polish or Fusion Splicing Only. (NO CRIMP-ONS)

15. Wiring Closets.

A. In the wiring closet, all Category 3 UTP cabling will be terminated on 66 blocks.

B. Category 6 UTP data cabling will terminate in the wiring closet on Category 6 compliant patch panels utilizing the 110-termination system (T568B). The patch panels will be mounted in 19" equipment racks.

16. Specialty Communications Outlets.

A. Wall mount phones shall comply with ADA requirements and may be whatever faceplate is convenient to the telco contractor.

17. Category 3 & 6 Testing.

A. Contractor shall test each pair of each twisted pair cable. The City of Las Vegas reserves the right to have a representative present during all or a portion of the testing process. If the City elects to be present during testing, test results will only be acceptable when conducted in the presence of the City.

B. All data cables will be tested with approved Category 6 test equipment meeting EIA/TIA-TSB 67 requirements from the faceplate to the termination point in the wiring closets and comply with the EIA/TIA 568B and Category 6 Standards. Fiber optic cable will be tested with an

approved Fiber tester or an Optical Time Domain Refractometer (OTDR) with attenuation not to exceed 3db/Km and meet FDDI specifications. Each cable will be tested, documented and labeled in accordance with the EIA/TIA 606 standard and provided to the City of Las Vegas.

C. Workstation Cable: Each workstation cable shall be tested from the Jack Panel to the data outlet jack.
   a. Test Equipment: Wirescope 350 or equivalent.
   b. Tests: Attenuation, Noise, Near End Cross-talk, Far End Cross-talk, Length, Power Sum Next, Power Sum ACR, DC loop back resistance, and pair-by-pair continuity.
   c. Test Criteria: The system shall be tested to Category 6 specifications. The test path shall include workstation jacks, station cables, jack panels and patch cables.
   d. All voice cables shall be tested to Category 3 specifications and documented.

18. Documentation.

A. Contractor shall provide documentation in electronic format, including test results and as-built drawings within fourteen (14) days of job completion.

B. Test Results: The results of the workstation cable and fiber optic, if applicable, tests shall be in the form of pinouts from the test equipment, in a comma delimited format.

C. As-Built Drawings: Contractor will be provided with clean copies of the Electrical Drawings depicting data outlet location. The Contractor shall update the drawings depicting network drop locations and numbers as they were installed and return a copy to the City, in AutoCADLT format.

19. Acceptance.

A. Acceptance of the Datacommunications System, by the City of Las Vegas, shall be based on the test results, functionality and the receipt of documentation. With regard to Category 6 functionality, Contractor must demonstrate to the City that gigabit data signals can be successfully transmitted, bi-directionally, from the MDF to and from all individual data outlets. With regard to Fiber cabling, Contractor must demonstrate to the City that it was installed according to standards and passed specific tests. With regard to documentation, all required documentation shall be submitted to the City of Las Vegas.

20. Warranty.

A. A complete cabling system warranty of no less than 15 years shall be provided to cover applications and components, as well as labor associated with the change out of any non-performing product. Warranty shall cover all installed components from entrance point to workstation outlets. Contractor will correct any problems resulting from their workmanship or the provided material failure, providing that there have been no alterations or changes to the installation by personnel other than the Contractor. Contractor will respond to warranty repair calls within 48 hours.

21. Cable Termination.

A. Maximum distance for any single Category 6 data run shall not exceed 90 meters.

B. Category 6 data cables shall be terminated in accordance with standards and practices governing the installation of such cable. This includes proper termination techniques to ensure

minimum near end cross talk (NEXT). Contractor may be asked to verify that the installed cable meets Category 6 requirements and is capable of GIGABIT data transmission speeds.

C. Category 6 data cables shall be terminated on RJ-45 jacks that are wired to the T568-B standard. Jacks shall be rated and clearly designated Category 6 compliant (Cat.6). All pairs shall be terminated on each jack.

D. Category 3 voice cables shall be terminated on RJ-11 jacks that are wired to the USOC standard. Two (2) pairs shall be terminated on each jack.

E. In locations where voice and data jacks are required, such jacks shall be combined into a double gang outlet box with single gang mounting plate. Each jack must be labeled VOICE or DATA.

F. All cables, jacks, patch panels and wiring blocks shall be clearly marked with a unique number designation identifying the cable termination at the jack location and the corresponding termination in the wiring closet.

22. Raceways.

A. All voice and data cable must be installed in conduit or approved raceway systems. Cable trays and conduit systems shall comply with a minimum bend radius and separation from power cabling and fluorescent lighting requirements as specified in the EIA/TIA 568A and 569A standards. Where conduit is installed, the bend radius shall be a minimum of 10X the diameter of the conduit.

B. Minimum conduit size for systems installed under this section shall be ¾".

Telecommunications Standards for Parks and Open Spaces

Parks and Open Spaces Categories:

- Parks without buildings or walled enclosures.
- Parks with irrigation pump or other walled enclosures (but no buildings).
- Parks with rest room facilities and sports field lighting.
- Parks with multiple buildings, sports field and other sports facilities lighting.
- Single or multiple buildings with irrigation controllers and/or sports field lighting controls separate from the building TTB.

23. Basic Sprint Service Requirements

A. These design standards do not attempt to list all Sprint requirements. Reference the Sprint standards and Sprint design engineer for standards and required variations from the following standards.

B. Provide two 2" buried conduits originating from the nearest Sprint designated telephone cable facilities to the park's designated point of termination, aka - telephone board (TTB), per Sprint Engineer's specifications.
   a. Provide one pull string per conduit end to end.
   b. All bends shall consist of not less than 24" sweeps.
   c. No buried elbows of any degree shall be used.

C. Provide one 30" pull box for every 400' of buried conduit length and/or for each 270 degrees of bends.

D. Provide one unpainted ¾" fire-retardant plywood backboard of not less than 24" X 24" mounted 40" above grade (unpainted so Building & Safety can inspect the material).

E. Provide one #6 ground located at the backboard.

F. The TTB shall be placed to allow easy access by Sprint Technicians.

24. Parks without buildings or walled enclosures.

A. Provide one 24" X 24" X 6" locking outdoor cabinet as the TTB.

B. This cabinet shall be mounted on a free-standing pedestal. This pedestal may be a portion of a CMU wall or other solid structure. Do not mount to steel posts. Locate and paint out the cabinet so it is not generally noticable by the public. Sprint must have direct and exclusive access to the cabinet; other equipment may not be included within the same cabinet, such as lighting timers, irrigation controls, etc.

C. This cabinet shall be mounted 40" above grade.

D. Provide full size ¾" plywood backboard within the cabinet.

E. Provide #6 ground within the cabinet.

F. Provide one 1" conduit using 12" sweeps for all bends, with a pull string end to end, from this cabinet to the Irrigation CPU (Central Processing Unit).

25. Parks with irrigation pump or other walled enclosures (but no buildings).

A. Provide one 24" X 24" X 6" locking outdoor cabinet as the TTB.

B. This cabinet shall be mounted to the outside wall of pump enclosure wall. Locate and paint out the cabinet so it is not generally noticeable by the public. Sprint must have direct and exclusive access to the cabinet; other equipment may not be included within the same cabinet, such as lighting timers, irrigation controls, etc.

C. This cabinet shall be mounted 40" above grade.

D. Provide full size ¾" plywood backboard within the cabinet.

E. Provide #6 ground within the cabinet.

F. Provide one 1" conduit using 12" sweeps for all bends, with a pull string end to end, from this cabinet to the Irrigation CPU (Central Processing Unit).

26. Parks with rest room facilities and sports field lighting.

A. Provide one 24" X 24" X ¾" (minimum) plywood backboard as the TTB (or this minimum dedicated area of a larger backboard as detailed on the city restroom drawings).

B. This backboard shall be mounted within the rest room plumbing chase whenever possible.

C. This backboard should be mounted 40" from the floor.

D. Provide one 1" conduit using 12" sweeps for all bends, with a pull string end to end, from the TTB to the Irrigation CPU (Central Processing Unit).

E. Provide one 1" conduit using 12" sweeps for all bends, with a pull string end to end, from the TTB to the Lighting Control Cabinet.

27. Parks with multiple buildings, sports field and other sports facilities lighting.

A. Provide one 48" X 48" X ¾" plywood backboard for the TTB.

B. This backboard should be mounted within a building's utility room whenever possible.

C. This backboard should be mounted 24" from the floor.

D. Provide one 1" conduit using 12" sweeps for all bends, with a pull string end to end, from the TTB to the Irrigation CPU (Central Processing Unit).

E. Provide one 1" conduit using 12" sweeps for all bends, with a pull string end to end, from the TTB to the Lighting Control Cabinet.

F. Provide one 2" conduit using 24" sweeps for all bends, with a pull string end to end, from the TTB to the utility room of each building to be occupied.

G. Any building that requires telephone or data equipment to be installed shall comply with City of Las Vegas Design Standards for the installation of conduit and communication jacks.

28. Single or multiple buildings with irrigation controllers and/or sports field lighting controls separate from the building TTB.

A. Provide one 2" conduit using 24" sweeps for all bends, with a pull string end to end, from the TTB to the Irrigation CPU (Central Processing Unit).

B. Provide one 2" conduit using 24" sweeps for all bends, with a pull string end to end, from the TTB to the Lighting Control Cabinet.

C. Provide one 30" pull box for every 400' of buried conduit length and/or for each 270 degrees of bends.

Telecommunications Standards for Elevator Emergency Telephones

29. Types of Communications.

A. Analog voice via programmable automatic-dial telephones.
B. Analog voice via Telco provided automatic ring-down service.

30. Elevator Categories.

A. New buildings with single or multiple elevators.
B. Existing buildings with existing single or multiple elevators.
C. Existing buildings being upgraded by adding elevators.

31. Basic Elevator Requirements.

A. Each elevator car shall be pre-wired with a voice grade wire/cable to the nearest telephone facilities.

B. One dedicated telephone line per each elevator car.

C. Provide one analog voice two-way emergency telephone per car.

D. Emergency Elevator Telephone Types:
   a. Programmable Touchtone Automatic Dialing telephones.
   b. Standard no-dial telephones connected to a Telco provided Automatic Ring-Down Service.

E. All emergency telephones will automatically dial Fire Control at 382-3000 when the receiver is taken off-hook.

F. All emergency telephones shall be capable of receiving incoming calls from emergency services personnel.

G. All elevator emergency telephones shall be accessible from a prone position from the floor of the car.

32. Contacts.

A. If you have any questions or concerns, please feel free to contact Datacom Doug @ (702) 229-6097 or Dick Reithel at (702) 229-6636.